University of Santa Clara

Catalogue

1921-1922

SANTA CLARA, CALIFORNIA

MAY. 1921

The Corporate Title of the University is

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Consulting Attorney,

CLARENCE C. COOLIDGE, Esq.

CHARLES M. LORIGAN, Esq.*

*Deceased September 24, 1920.

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CALENDAR

1921

Aug. 17, Wednesday.	Registration of non-resident High School students, 9 a. m. Registration of resident High School students, 1:30 p. m. (Fee for late registration $1.00)
Aug. 18, Thursday.	High School classes begin at 2.30 p. m.
Aug. 22, Monday.	Registration of non-resident University students, 9 a. m. Registration of resident University students, 1:30 p. m. (Fee for late registration $1.00)
Aug. 23, Tuesday.	Classes begin in University courses at 2:30 p. m. Classes begin in Institute of Law at 6:55 p. m.
Aug. 29, Monday.	Examinations begin for the removal of Conditions.
Sept. 5, Monday.	Labor Day; a holiday.
Sept. 9, Friday.	Admission Day; a holiday.
Oct. 12, Wednesday.	Columbus Day; a holiday.
Nov. 1, Tuesday.	Feast of All Saints; a holiday.
Nov. 22, Tuesday.	Thanksgiving vacation begins.
Nov. 25, Friday.	Feast of St. Catherine; a holiday for Philosophers in the College of Letters.
Nov. 27, Sunday.	Thanksgiving vacation ends.
Dec. 3, Saturday.	Repetitions begin in all classes.
Dec. 8, Thursday.	Feast of the Immaculate Conception; a holiday.
Dec. 10, Saturday.	Examinations begin for students who were conditioned before graduation.
Dec. 17, Saturday.	Mid-year Examinations begin.
Dec. 21, Wednesday.	Christmas vacation begins.

1922

Jan. 4, Wednesday.	Christmas vacation ends. Second Semester begins.
Jan. 9, Monday.	Examinations begin for the removal of Conditions.
Jan. 27, Friday.	St. John Chrysostom's day; a holiday for Sophomores in the College of Letters.
Feb. 21, Tuesday.	Oratorical and Elocution Contests for Owl and Junior Prizes.
Feb. 22, Wednesday.	Washington's Birthday; a holiday.
Feb. 26, Sunday.	Students' Retreat begins at 6:20 p. m.
March 2, Thursday.	Students' Retreat ends; a holiday.
March 17, Friday.	St. Patrick's Day; a holiday.
March 22, Tuesday.	Donahue Prize Contest in Latin and Greek Composition.
	Last day to submit subjects for graduation theses in all departments, and Sophomore Essays.
March 28, Tuesday.	Dramatic Art Contest.
April 11, Tuesday.	Last day to submit essays for Redwood Prizes.
	Last day to submit essays for Orella Medal.
April 12, Wednesday.	Easter vacation begins.
April 17, Monday.	Easter vacation ends.
April 21, Friday.	Archbishop's Medal Contest in Christian Doctrine.
April 25, Tuesday.	Ryland Debate.
May 9, Tuesday.	Last day to submit graduation theses.
	Last day to submit short stories for McCann Prizes.
May 11, Thursday.	Barchi Medal Contest in Mathematics.
	Repetitions begin for Seniors in Colleges of Letters, Letters and Science, Engineering and High School.
	Repetitions begin for Juniors in Letters and Science, and Engineering.

May 12, Friday.	Last day to submit Sophomore Essays.
	Repetitions begin for Sophomores in Letters and Science.
May 24, Wednesday.	Written examinations begin for Seniors in Letters and Science.
May 25, Thursday.	Feast of the Ascension; a holiday.
May 26, Friday.	Written examinations begin for College of Engineering, Sophomore and Freshmen in Letters and Science, and for all High School classes.
	Written examinations begin for Juniors in Letters and Science.
	Oral examinations in Law begin.
	Oral examinations begin for Sophomores in Letters and Science.
May 27, Saturday.	Oral examinations begin for Juniors in Letters and Science.
	Oral examinations begin for Seniors.
May 30, Tuesday.	Baccalaureate Mass and Sermon.
	Oral examinations begin for Juniors in College of Engineering.
May 31, Wednesday.	Seventy-first Annual Commencement.

FACULTY OF THE UNIVERSITY

TIMOTHY LEO MURPHY, S. J., A. M.

President.

JOSEPH ALOYSIUS SULLIVAN, S. J., A. M.

Vice-President, Director of Discipline, Moderator of the Associated Student Body.

CORNELIUS ALOYSIUS BUCKLEY, S. J., A. M.

Dean of the Faculties, Director of Studies, Director of the School of Pedagogy, Registrar.

EUGENE STANISLAUS OLIVER, S. J., A. M.

Secretary and Treasurer.

JAMES JOSEPH HAYES, S. J., A. M.

Professor of Ethics, Theodicy, History of Philosophy and Sociology.

WILLIAM MICHAEL BOLAND, S. J., A. M.

Professor of Logic, Metaphysics, Psychology and Philosophy of Religion; Chaplain, Director of the Sodality of the Immaculate Conception and the League of the Apostleship of Prayer.

JOSEPH CASIMIR SASIA, S. J., A. M.

Librarian.

EDMOND JOSEPH RYAN, S. J., A. M.

Professor of English, Public Speaking, Latin and History; President of the Philalethic Senate.

RICHARD HENRY BELL, S. J., A. M.
Professor of Physics and Advanced Algebra.

EDWARD CHARLES MENAGER, S. J., A. M.
Professor of Inorganic Chemistry, Geology and Mineralogy.

GEORGE GOLDEN FOX, S. J., A. M.
Professor of English and Philosophy in the College of Engineering; Instructor in Elocution; President of the Senior Dramatic Society.

JEROME SIXTUS RICARD, S. J., A. M.
Director of the Astronomical, Meteorological and Seismological Observatory.

EDWARD SHIPSEY, S. J., A. M.
Professor of English, Public Speaking, and Latin; Speaker of the House of Philhistorians; Director of "The Redwood".

DANIEL BASSETT, S. J., A. M.
Instructor in Trigonometry, Solid Geometry, Greek, United States History and Civil Government.

ALFONSO DIAZ MONFORT, A. B.
Assistant in Chemistry.

JOSEPH JEREMIAH DONOVAN, S. J., A. M.
Instructor in English, Latin, Plane Geometry, and History

DANIEL PAUL MEAGHER, S. J., A. M.
Instructor in English, Latin and History.

JAMES BERNARD HENRY, S. J., A. M.
Instructor in English, Algebra, Engineering Drawing, Descriptive Geometry; Director of the Saint John Berchmans Sanctuary Society.

HUGH COLUMBUS DONAVON, S. J., A. M.

Instructor in English, Latin, Greek and History; President of the Junior Dramatic Society.

JOSEPH FRANCIS HOWARD, S. J., A. M.

Instructor in English, Latin and History; Director of the Holy Angels Sodality.

IVAN M. FABRIS, S. J., A. M.

Instructor in English, Latin and History; Moderator of the Junior Student Body.

JOHN FRANCIS COSGRAVE, S. J., A. M.

Instructor in English, Latin, History and Algebra.

ALBERT ALOYSIUS BELANGER, S. J.

Assistant to the Director of Discipline.

CLARENCE CHARLES COOLIDGE, B. S., A. B., J. D.

Dean of the Institute of Law; Professor of Law.

JOHN EVANS RICHARDS, A. B., LL. B.

(Associate Justice of the District Court of Appeal for the First Appepllate District of California.)

Presiding Judge of the District Court of Appeal of the University, Institute of Law.

WILLIAM ARTHUR BEASLY, LL. B.

(Judge of the Superior Court of California, for the County of Santa Clara.)

Judge of the Superior Court of the University, Institute of Law.

FRANK HOBART BLOOMINGDALE, LL. B.

Professor of Law.

LAWRENCE ARCHER BOWDEN, LL. B.

Professor of Law.

NICHOLAS BOWDEN, LL. B.

Professor of Law.

RICHARD VALENTINE BRESSANI, A. B., LL. B.

Professor of Law.

JOHN JOSEPH JONES, A. B., LL. B.

Professor of Law.

ALBERT JOSEPH NEWLIN, B. S., J. D.

Assistant Professor of Law.

OWEN DALE RICHARDSON, A. M., LL. B.

Professor of Law.

JAMES PETER SEX, Ph. D., J. D.

Professor of Law.
Judge of the Superior Court of the University, Institute of Law, from February 1st.

CURTIS HOLBROK LINDLEY, LL. D.*

Lecturer in Law.

GEORGE LEONARD SULLIVAN, M. E., Ph. D.

Dean of the College of Engineering; Professor of Mechanical-Electrical Engineering.

WILLIAM DIRVIN LOTZ, B. S.

Professor of Civil Engineering.

ALVIN OLIN EVANS, B. S.

Assistant Professor of Electrical Engineering.

*Deceased Sept. 20, 1920.

JULIAN JEREMIAH GRIMES, A. B., A. C. T., London

Professor of Architecture and Mathematics.

HENRI LECAT, Brev. Sup., Paris

Professor of French.

JOSEPH ROBERT FERNANDEZ

Professor of Spanish.

DEMETRIO DIAZ, B. S., LL. B.

Instructor in Spanish.

ROBERT EMMETT HARMON, B. S., LL. B.

Instructor in Elementary Law and Mathematics.

BARTHOLOMEW RICHARD SULLIVAN, B. S.

Instructor in Accountancy, Commercial Law, Business Practice, Stenotypy, Shorthand and Typewriting.

SAMUEL JOSEPH MUSTOL, B. Mus.

Director of Music; Leader of the University Band and Orchestra.

THOMAS STANISLAUS MANGAN, A. B.

Assistant to the Director of Discipline.

FREDERICK GERLACH, M. S., M. D.

Visiting Physician and Surgeon.

ANTHONY STANISLAUS PEREIRA, S. J.

Infirmarian.

UNIVERSITY OF SANTA CLARA

LOCATION

The University is situated in the Mission town of Santa Clara, in Central California, forty-eight miles south of San Francisco and three miles from San Jose. The valley of Santa Clara is famous throughout the world for the beauty of its scenery, the salubrity of its climate, and the excellence of its fruits. The climate is mild and equable both in summer and winter, and on that account singularly favorable for persistent study and research as well as for the maximum of agreeable out-of-doors recreation which such work makes necessary. There is one well-defined rainy season, lasting from December to April, in which about fifteen inches of rain usually fall. Snow is almost unknown in the valley and falls on the surrounding hills hardly oftener than three times a year, melting almost as soon as it appears. Thirty degrees is normally the lowest temperature experienced in winter nights and this rises to about 55 degrees at noon. The average mid-day temperature in summer is about 70 degrees; it ranges between 60 and 80 degrees, and occasionally rises higher. Even the warmest days are followed by cool nights, of which the usual temperature is 55 degrees.

FOUNDATION

The University of Santa Clara is located on the site of the Old Mission of Santa Clara.

On January 12, 1777, two Franciscan Padres, de la Pena and Murguia, planted the Mission Cross on the banks of a little stream, called from that time the Guadalupe, at a spot now forming a part of the Laurel Wood Farm, near Agnew. Two years later, a flood destroyed both church and monastery, and

the Padres in consequence sought a site on higher ground near the present railway station at Santa Clara.

There, on November 9, 1781, they laid the foundation of a large adobe church and mission buildings. Three years later, on May 15, 1784, the new church was dedicated, by the Venerable Padre Serra, then Padre Presidente of all the Missions of California.

This church, however, was so badly shattered by several earthquakes in 1812 and 1818, that the Padres were forced to build anew. This time they chose the site which the University now occupies. There, on August 11, 1822, a still larger church was dedicated, which did service for many years till the violent earthquakes in the years 1865 and 1868 so cracked and weakened it that extensive repairs were necessary. By the year 1885 it had been almost entirely removed, having been gradually replaced by the present frame building, the interior of which is a nearly perfect reproduction of its predecessors and retains some of the old ornaments and furniture and the ceiling of the sanctuary.

The Mission of Santa Clara was secularized in 1836 and passed from the hands of the devoted Padres into those of politicians, who in dealing with the helpless Indians violated God's laws of right and justice, as well as the laws of the Mexican government in whose name they ruled. Santa Clara was soon robbed of her lands, and her children were oppressed or driven away to the forests.

When Rt. Rev. Joseph Sadoc Alemany, O. P., arrived, as Bishop of the Diocese of San Francisco in 1850, he found only one Franciscan in charge of the mission, which had been restored by the American government, though in a sadly reduced form, most of the land being occupied by squatters.

Desiring to save the remnants of the mission, and also to begin a college to meet the growing need of the time, the Bishop invited the Society of Jesus to Santa Clara. The invitation was accepted, and accordingly on March 19, 1851, the Rev. John Nobili, S. J., laid the foundation of the University of Santa Clara and began the work.

Fr. Nobili adapted the old adobe buildings to the require-

ments of a school, and in a few years numerous students were in attendance. On April 28, 1855, the institution was chartered a University and continued for many years to be known as Santa Clara College.

In 1904, during the presidency of Father Robert E. Kenna, S. J., a large tract of land was bought at Mountain View, with the intention of transferring the college thither, but, owing to the lack of financial support, nothing was done.

After careful consideration it was decided, in 1910, that this plan would have to be abandoned, and that it was much wiser to improve the College in its present location and thus make the most of the equipment it then had. Accordingly, in 1911, two new reinforced concrete buildings, in the mission style, were begun.

In 1907 lectures were commenced with a view of preparing students to enter upon the professional courses in law, medicine and engineering. By 1911, the pre-medical course was thoroughly established and the law school was begun. Realizing, therefore, that the college was practically doing the work of a University, the President, Fr. James P. Morrissey, S. J., and the Board of Trustees, decided to adopt officially the name of "The University of Santa Clara", and this decision was publicly announced on April 29, 1912. Later, on June 16, 1912, with appropriate ceremonies, in the presence of Most Rev. Patrick W. Riordan, D. D., Archbishop of San Francisco, of many present and former students, and of 30,000 spectators, with a pageant illustrative of the history of California and Santa Clara, the two new buildings were dedicated.

In the summer of 1912, engineers of high standing were engaged to carry on the courses in engineering, and in the next summer a thoroughly equipped laboratory for engineering was prepared. In the same year the amount of work required of law students was increased and almost all classes in Law were thenceforth held at night.

THE PRESENT.

The number of students is steadily increasing, but, owing to the fact that only a limited number can be accommodated the growth of Santa Clara is greatly hampered.

Even more pronounced than this material growth has been the improvement wrought in the student body by the judicious selection of applicants for admission. The principle of the Faculty has been to receive and retain no one whose habits are not irreproachable. Today parents realize that education which neglects manners is a mistake and that a university which overlooks or takes little account of morals is a monstrosity.

CONSTITUENT COLLEGES.

The University now possesses the following constituent Colleges:

The College of Philosophy and Letters;
The College of General Science;
The Institute of Law;
The College of Engineering, embracing Architectural, Civil, Electrical and Mechanical Engineering;
The School of Pedagogy; and
The Pre-Medical Course.

FUNDS AND NEW BUILDINGS.

The growth in the number of students has made it imperative in recent years to provide ampler and more substantial accommodations. For this, and in order that Santa Clara may widen its scope as an educational institution of recognized standing, funds are necessary. Santa Clara stands in imperative need of an endowment. The work the University has accomplished in the past is an earnest of what she will do when increased facilities are afforded her.

An endowment, however, implies a founder or founders and benefactors. During the past few years, many have helped the University and generous donations have been made. The

Administration building, 200x43 feet, and the Senior Hall, both in reinforced concrete, are completed. But before other buildings for which the plans of the University provide, may be added, further benefactors will be needed. Other educaional institutions, even those state-aided and richly endowed, receive generous assistance in their work and hesitate not to ask it. Santa Clara feels that generous friends are not lacking, though for the want of deeper thought on the matter, few realize the importance of Christian educational work, the immense sacrifice it entails, and the merit there is in co-operating and sharing with Christian educators in their work for God and Country and the welfare of the young men of our generation who are to become the leaders of the generation of tomorrow. The faculty of the University has given its life-services freely and gladly to the work. Those who would share with them in this great enterprise can do so most effectively by rendering material aid and contributing funds for the continuance and development of the work.

FORM OF BEQUEST.

I give and bequeath unto the President and the Board of Trustees of Santa Clara College, a corporation duly incorporated under the laws of the State of California, a sum of .....dollars.

SYSTEM OF EDUCATION.

The Jesuit system of education aims at developing side by side the moral and intellectual faculties of the student, and sending forth to the world men of sound judgment, of acute and rounded intellect, of upright and manly conscience. And since men are not made better citizens by the mere acquisition of knowledge, without a guiding and controlling force, the principal faculties to be developed are the moral faculties. Moreover, morality is to be taught continuously. It must be the underlying base, the vital force supporting and animating the whole organic structure of education. It must be the

atmosphere the student breathes. It must suffuse with its light all that he reads, illumining what is noble and exposing what is base, giving to the true and false their relative light and shade.

STUDIES.

It is one of the decided advantages of the system followed at Santa Clara, that the student may begin his studies in the Preparatory School conducted under the supervision of the University authorities, and then pass on, through the University Courses, to graduation under the same direction and influence. This secures, besides the moral influence thus gained, a uniform and homogeneous course of teaching and training. The result of this system is a continuous and normal development of the mental faculties along well defined lines, and the possession of a clear and coherent system of principles.

BUILDINGS.

THE MISSION CHURCH.

Built on the site of the old Mission Church of 1822, this building preserves many of the relics and decorations of the Franciscan days, though most of the walls have been removed.

THE MEMORIAL CHAPEL.

As a memorial of deceased students this handsome chapel was erected in 1887, during the presidency of Rev. Father Robert E. Kenna, S. J., through the generosity of many alumni and friends of Santa Clara College.

SENIOR HALL.

This hall, built in 1912 of reinforced concrete, furnishes on the second and third floors, private rooms for the older students. On the first floor are seven large class-rooms for College Classes, the Law Library and Study Hall, and the College

of Engineering. In the basement are a large social hall, the Practice Court of the Institute of Law and the Palaeontological Museum.

THE THEATRE.

All dramatic productions of Santa Clara since 1870, including the Passion Play and the Mission Play of Santa Clara, have been presented in this theatre. Its stage is one of the largest for amateur productions in the West. The lower floor is fitted up as a Dormitory for older students.

THE LITERARY CONGRESS BUILDING.

For a time the meeting place of the House of Philhistorians and the Philalethic Senate was in this building. Now it houses the Philalethic Senate and the Department of Chemistry, and is used to some extent as a substitute for a Gymnasium.

THE SCIENTIFIC BUILDING.

The First and Second Division Study Halls, the Typewriting Room, the Physical Cabinet and Laboratory, the Mineralogical Museum, the Biological Laboratory and Lecture-rooms, and the Laboratory for Wireless Telegraphy are in this building.

THE COMMERCIAL BUILDING.

This building contains the High School class-rooms and study hall, the Commercial School, the Physical Laboratory for the High School, and the Drafting room of the College of Engineering.

THE INFIRMARY BUILDING.

This structure, with its several wings, comprises the Kitchen, the Refectories, the Infirmary with private rooms and ward, Dormitories for younger students, Clothes-room, the Students' Co-operative Store, rooms for the individual practice of music, and the Bandroom.

THE OBSERVATORY.

The equatorial telescope, seismographs, meteorological instruments, and the study of the Father in charge, are housed in four small buildings.

THE FACULTY BUILDING.

This structure of reinforced concrete built in 1912, to replace the old Fathers' Building which was destroyed by fire in 1910, contains the offices of the chief executive officers of the University, parlors, the residence of the Fathers and Scholastics who are attached to the University or the Parish of Santa Clara, and the Library of the University.

THE ENGINEERING LABORATORY.

Forges, machinery for wood-working and pattern-making, etc., used in the courses of the College of Engineering find place in this building.

ATHLETIC FIELD.

This includes the grounds devoted to intercollegiate contests is baseball and football. It contains some fifteen acres of field and lawn.

OUTER CAMPUS.

Three city blocks in front of the Administration Building and Senior Hall give room for two large baseball diamonds and football fields for the Junior and other organizations.

INNER CAMPUS.

This field, located between Senior Hall and the Scientific Building, contains the track, tennis courts, handball courts, etc.

SESSIONS, HOLIDAYS, HOURS.

The school year consists of two semesters.

The first semester begins August 18th, 1921, for High School students, and August 23rd, 1921, for College students, and ends December 21, 1921.

The second semester begins January 4th, 1922, and ends May 31st, 1922.

The recess at Thanksgiving begins November 22nd, 1921, and ends November 27th, 1921.

The recess at Christmas begins December 21st, 1921, and ends January 4th, 1922.

The recess at Easter begins April 12th, 1922, and ends April 17th, 1922.

The weekly holiday is Wednesday.

Lectures and classes begin daily at 8:05 a. m., and close at 3:30 p. m.

In the Institute of Law, class is held every evening at 6:55. Every evening, including Wednesday, there are two periods of class in legal subjects, each of which lasts from one to one and one-half hours.

FACULTY COMMITTEES

EXAMINATIONS—

SOPHOMORE—The Professors of Sophomore and Freshman Courses.

JUNIOR—The Director of Studies, and the Professors of the Junior Courses.

SENIOR—The President, the Director of Studies, and the Professors of the Senior Courses.

THESES—The Director of Studies and the Professors of Junior and Senior Courses.

ATHLETICS—Board of Athletic Control. The Director of Studies, the Director of Discipline, the Treasurer.

ATTENDANCE—The Director of Studies, and the Director of Discipline.

DISCIPLINE—The Director of Discipline, the Assistant Director of Discipline and the Director of Studies.

DRAMATICS AND PUBLIC EXERCISES—The President, the Director of Studies, the Director of Discipline, and the President of the Senior Dramatic Club.

"THE REDWOOD"—The Director of Studies, the Faculty Director guiding the staff, and the Professors of Philosophy and English.

POST-GRADUATE STUDIES—The President, the Director of Studies, and the Professors of the subjects in which the Post-Graduate work is taken.

SCHOLARSHIP AND STANDING—The Director of Studies, and the Deans of the several Colleges.

SCHOLARSHIPS

Every year deserving young men of high character and aspirations, whose means do not permit their attending the University, appeal to the Faculty for assistance to obtain the education for which their talents and vocation fit them. There is scarcely a university in the United States which is not provided with a fund for this purpose, and a relatively large percentage of successful college men spring from the class of assisted students. It is clearly a noble benefaction to contribute to such a purpose in any case. But this is especially so with regard to those who apply for help to the University of Santa Clara. They are as a rule young men of high standing, who understand the paramount value of an education in a university which aims at the highest intellectual development of the student, while devoting no less attention to the perfect development of his moral character. As a consequence, to assist them in attaining their desire is to aid picked young men whose future is more than ordinarily full of promise, and who are destined to exert a most powerful influence on those among whom their lives will be spent.

It is the intention of the Faculty of the University of Santa Clara to make an earnest effort to supply this pressing need, by establishing free scholarships for resident and non-resident students, so that worthy young men may receive the help they desire. For this purpose an appeal is made to all who appreciate the importance of the matter.

The Scholarships to be founded will be of two classes, perpetual and temporary. By establishing a perpetual scholarship the donor will maintain one student at the University of Santa Clara in perpetuity. A temporary scholarship will maintain one student at the University during the four years of his course. The amount contributed will be invested in reliable securities, the interest of which will support the student. The cost of founding Scholarships is as follows:

Perpetual Scholarship for a resident student—board, lodging, etc., tuition, text-books.....$12,500.00
A perpetual Scholarship for a day student—tuition and text-books .....$ 3,000.00
A temporary Scholarship for a resident student—board, lodging, tuition, text-books, for four years..$ 2,000.00
A temporary Scholarship for a day student—tuition, text-books, etc., for four years.....$ 500.00

It is the desire of the Faculty to name these scholarships after their founders, that thus the recipients of their generosity may know to whom they are indebted for their education, and keep them in grateful memory.

THE ALICE PHELAN SULLIVAN MEMORIAL SCHOLARSHIP.

This perpetual scholarship for a resident student was founded in 1912 by the gift of $12,500 from "A Friend" in memory of Mrs. Alice Phelan Sullivan of San Francisco.

THE JESSE W. BRYAN MEMORIAL SCHOLARSHIP.

This perpetual scholarship for a resident student was founded in 1913 by the gift of $12,500 by Mrs. Sarah A. Bryan, in memory of her son, Mr. Jesse W. Bryan, a former student of Santa Clara.

GENERAL REGULATIONS

No one will be admitted as a student unless he has a good moral character.

Candidates for admission must present satisfactory recommendations. Those from other educational institutions must be recommended by the institutions whence they come. For scholarship requirements cf. Graduate and Undergraduate Departments.

To cultivate the heart, no less than to develop the intellectual and physical faculties of the students, is a duty kept constantly and sacredly in view.

Students are not received for a shorter period than one semester.

As the Faculty of the University profess the Catholic Religion, the exercises of religious worship are Catholic; but members of any religious denomination are received, provided they be willing, for the sake of order and uniformity, to conform respectfully to the religious observances of the University.

No student will be permitted to leave the University on visits of any length, except during Thanksgiving, Christmas and Easter vacations, if such be the wish of his parents or guardian. Parents are requested not to call their sons home at other times, except in cases of urgent necessity, as such interruptions, besides tending to prevent the acquisition of habits of concentration and persevering work, are apt to result in poor scholarship and interfere seriously with the student's entire scholastic training.

A recess at Thanksgiving and Easter may be given at the discretion of the President.

Students taking Collegiate courses, whose homes are not in the neighborhood, must reside within the University unless they are accompanied by their parents.

Students who, having left the University for the summer

vacation, Christmas holidays, or other recesses allowed by the President, fail to be present on the day for the re-opening of class, will, by the fact of absence, be excluded from the University, or at the discretion of the Faculty from privileges until the following semester, particularly the privilege of visiting friends and relatives on the Second Wednesday, unless parents or guardians show cause of absence which the Faculty shall consider wholly sufficient.

The High School students are not allowed the use of tobacco.

Students are not permitted to have books or other publications that have not been approved by the Vice-President.

The students' correspondence is subject to the inspection and control of the President.

To hold meetings or to form clubs or societies of any kind without the consent of the President, to enter pool-rooms, the habitual use of profane language, unbecoming conduct either within or without the precincts of the Institution, the possession or distribution of indecent publications or pictures, intoxication, procuring or introducing intoxicating liquors, directly or indirectly into the University, habitual idleness and violation of the rules of the University, obstinate refusal to submit to a punishment inflicted, absence from the University at night without leave from the President, avowed principles of infidelity, express contempt or ridicule of religion, are offenses which expose the offenders to dismissal or suspension, as in the judgment of the Faculty shall be deemed necessary.

EXPENSES IN ALL THE DEPARTMENTS OF THE UNIVERSITY

RESIDENT STUDENTS.

Matriculation fee, paid at entrance	$ 15.00
Tuition, Board and Lodging, in High School Department, per semester	250.00
Tuition, Board and Lodging, in College Department, per semester	250.00
Athletic fee, per semester	5.00
Library fee, per semester	1.50

NON-RESIDENT STUDENTS.

Tuition in High School Course, per semester	$ 30.00
Tuition in University Course, per semester	50.00
Athletic fee, per semester	5.00
Dinner (if desired), per semester	50.00
Library fee, per semester	1.50

EXTRA EXPENSES.

LATE REGISTRATION.

Registration after opening day of semester	$ 1.00

PRIVATE ROOMS

If used by two, per semester, each	$ 50.00
Room deposit	10.00

A few rooms are reserved at a higher rate.

No rooms will be assigned until a room-deposit of $10.00 will have been made. This deposit is to cover any injury that may be done to room or furniture. If no damage be done, the deposit will be returned when the student gives up the room. Rooms will be given to those students only who pay the full rate.

BOOKS.

Deposit for books by law students.....$ 35.00
Deposit by those not law students..... 10.00

Non-Resident Students pay in cash. Books and stationery are furnished at dealers' rates.

LAUNDRY EXPENSES.

Laundry expenses will constitute extra charges. To cover such expense a deposit, per semester, will be required of .....$ 15.00

LABORATORIES.

Physics and Chemistry in Collegiate Course, per semester .....$ 12.50
Pre-Medical Course, per semester..... 25.00
Engineering, Freshman, per semester..... 12.50
Engineering, Sophomore, per semester..... 20.00
Engineering, Junior, per semester..... 25.00
Engineering, Senior, per semester..... 25.00
A deposit in all Laboratories against breakage, per semester 5.00

MUSIC.

Instruction in Music, per semester.....$ 40.00

TYPEWRITING.

Per semester .....$ 5.00

STENOTYPY.

Per semester .....$ 5.00

DIPLOMAS AND CERTIFICATES.

High School Diploma .....$ 3.00
Commercial Certificate 5.00
Degrees and other College Certificates..... 10.00

No Certificate or Degree is given unless all accounts with the University have been settled.

EXTRA EXAMINATIONS, SYLLABUS, RECORD.

For each extra examination to remove a condition, or for any examination taken out of time.....$ 2.00
For each syllabus (synopsis of a semester's work in any subject furnished by the teacher)..... 1.00
For each copy of a student's record other than the first furnished him 2.00

POCKET MONEY AND INCIDENTALS.

The amount of Pocket Money and money for incidentals is left entirely to parents and guardians. The University prefers that parents deal directly with the Students. Should, however, parents or guardians wish the Treasurer of the University to look after these matters, they must deposit a sufficient amount with him and instruct him how the money is to be used. The University does not advance money for these purposes.

INFIRMARY CHARGES.

No charges are made for the ordinary attendance of the University Physician. Medicines are charged at cost prices. For a room in the Infirmary a dollar a day is charged.

PAYMENTS.

PAYMENTS MUST BE MADE HALF-YEARLY IN ADVANCE. IN SPECIAL CASES, HOWEVER, QUARTERLY PAYMENTS MAY BE ARRANGED FOR.

It is unpleasant to press friends and patrons for payment. Remittances should be made in the name of the University of Santa Clara. Semester bills and unpaid balances are subject to sight draft ten days after the bill is rendered.

REBATES.

Grievous sickness necessitating absence from the University beyond a month is the only reason for which a rebate is allowed. Late attendance, dismissal, the withdrawal of

students by parents or guardians and similar happenings, are serious inconveniences to the University, and hence contracts are made for sessions and not shorter periods.

An itemized bill is furnished once every semester.

When a pupil is withdrawn temporarily or permanently from the University, the President must be directly informed, and money supplied for travelling expenses.

A limited number of student helpers may be received at reduced rates.

A HEALTH REQUIREMENT IS EXACTED

All students are subject to examination by the University physician.

EVERY APPLICANT

should forward to the President a certificate of the studies he has completed with a testimonial as to his character and diligence, signed by the head of the school last attended. Where the applicant has received a degree, or has been otherwise graduated, he should present his diploma or its equivalent, duly signed by the proper authorities of the school that issued it.

The articles which every student coming to reside at the University should bring with him are, more or less: two blankets, two pairs of sheets, three pillow cases, two counterpanes, a sufficient number of shirts, drawers, handkerchiefs, socks, shoes, napkins, towels, combs, brushes. These must be all marked distinctly with the student's name before he registers.

Promptness in reaching the University on the day fixed for the opening of classes is necessary. It is essential that Parents and Students understand this clearly from the beginning of their connection with the University, as promptness in returning from vacations and recesses, which is requisite in order to prevent the loss of valuable time and the forming of habits of procrastination and negligence of duty, is strictly insisted on.

GENERAL PROVISIONS REGARDING SCHOLARSHIP AND STANDING.

ATTENDANCE.

No student is eligible to enter any examination, written or oral, nor is he entitled to credit, unless he has been in attendance at 80 per cent of the classes, but students in the Institute of Law must have been in attendance at 90 per cent of the classes. Absence caused by sickness will not excuse a student from the operation of this rule.

WRITTEN EXAMINATIONS

Are held monthly in all subjects and in all departments. They are also held twice a year upon the work seen during the preceding semester.

ORAL EXAMINATIONS

At the end of the scholastic year must be passed by the following classes of students:

1. Students finishing Sophomore year in the College of Letters or the College of Science must be examined in English and Latin for fifteen minutes in each subject and in Greek (or a Modern Language), ten minutes.

2. Students who have followed the course in Elementary Law for one semester or more must be examined therein for ten minutes.

3. All students, regular or special, who have followed the courses in Philosophy and Political Economy, or any part thereof, must be examined therein for twenty minutes.

4. All students, regular or special, in the Institute of Law, the Pre-Medical Courses, the School of Pedagogy, and all other courses open to Juniors and Seniors in the College of Letters or the College of Science, except Philosophy and Political Economy which have been provided for above, must be examined in the subjects pertaining to such schools or courses, for forty minutes.

5. All students in the Commercial Department, as a final

test for graduation, must be examined for thirty minutes in all subjects taught in that Department, or in such of those subjects as the examiners may choose.

No student may be orally examined unless he has passed satisfactorily all the written examinations given at the end of each semester on the matter seen therein, or having been conditioned in the first semester examination, has removed the condition; nor unless, in addition to the preceding requirement, he has received a passing grade on the whole year's work in every subject studied.

The examination must extend to all the work done during both semesters in the subjects indicated; but if the student was present during only one semester, the examination covers the work of that semester only.

The examination is to be conducted privately before a board of the Faculty who may increase the time alloted to any examination if they see fit. It does not determine the grade of a student's standing, but neither promotion nor credit is given without a successful pass.

PROMOTIONS.

A student to be promoted in any subject must have attained an average of at least 70 per cent on the whole year's work in that subject.

This average is computed as follows, all subjects being marked on the basis of 100 for perfect work.

Class-work counts two-thirds, the monthly examination counts one-third for the monthly mark.

The sum of five monthly marks counts two-thirds and the semester examination counts one-third for the semester mark.

The sum of the marks for the first and second semester divided by two gives the mark for the whole year's work.

Where an oral examination is required, the student cannot be promoted or graduated unless he attains therein the passing mark of 70.

Special regulations as to the grades to be maintained by

law students, candidates for degrees and certificates, will be found under "Institute of Law, Graduation."

CONDITIONS.

A mark of 60 to 70 indicates a condition.

WHEN CONDITIONS MAY BE REMOVED.

Where a student is conditioned in an examination given at the end of the first semester, he will not be re-examined until approximately two months after his failure. Unless this condition is removed upon re-examination, the student will not be admitted to the final examinations at the end of the year.

Where a student is conditioned in a written or oral examination, given at the end of the school year, he will not be re-examined until the beginning of the next school year; provided however, that where a student is conditioned in a written or oral examination given as one of the final tests before graduation, he will not be re-examined until six months after receiving the condition.

Where a student has been re-examined in any subject to remove a condition or reach a certain average, another examination may be permitted in the discretion of the Faculty; but in no case may it be taken until two months have elapsed since the former examination. If the student fails to reach the required average no further examination will be allowed.

See also "Failures" below, for pre-requisites to re-examination.

Any student who enters the Senior year of any of the Colleges with a condition, will have the status of a special student unless this condition is removed within one month after the opening of the University for the first semester.

FAILURES.

A mark of less than 60 indicates a failure.

A failure in a subject means that the student must repeat the work in class the next time it is given.

A conditioned student who fails to pass a satisfactory ex-

amination at the time set for condition examinations, receives a failure in the subject.

If the condition is received in a Bookkeeping or a Laboratory course, the student must make up the work in which he is deficient before the time of the condition examinations, or receive a failure.

FEE FOR CONDITION AND IRREGULAR EXAMINATIONS.

For every examination, written or oral, given out of the regular time, or to remove a condition, an extra charge of two dollars is made.

RECOMMENDATION TO OTHER SCHOOLS.

No student will be recommended for entrance into any other University, College or High School who has not maintained an average of 85 per cent in every subject throughout his course.

No credit can be given for work done during any semester in which the student has not been present at eighty (or in the Institute of Law, ninety) per cent of the classes.

CANDIDACY FOR DEGREE OR CERTIFICATE.

Every person who wishes to become a candidate for a degree or certificate in the work of any department of the University, must, not later than one month after his entrance, file with the Committee of Scholarship and Standing a written statement of the degree or certificate to which he aspires and the work which he proposes to do. He will then be informed whether he may be admitted as a candidate for such degree or certificate and whether the work proposed is satisfactory. Any change of purpose must be similarly announced.

ELECTING STUDIES.

All students must inform the Director of Studies in writing as to their choice of subjects, and no one may enter upon a course or relinquish one already taken up without his advice and consent, upon penalty of receiving no credit in the first case and a condition in the subject abandoned, in the second.

REGISTRATION CARD.

Before registering for instruction in any department, the student must obtain a card signed by the Treasurer of the University, showing that a satisfactory settlement of his account has been made. This card is handed to the Director of Studies from whom the student must obtain another blank, write thereon the subjects elected and approved, and present it to his professors for their signature. This registration card is then returned to the Director of Studies, to be filed in his office.

WRITTEN WORK.

The following written work is required of the students, in all the classes indicated:

All students in the course of Philosophy and Political Economy must write and deliver to their professor every month an essay of not less than 1500 words, on a subject selected by him from the matter lately studied.

In all classes of Mathematics, three groups of problems are to be set weekly.

In all classes of English, a composition, essay, or poem, and two written exercises in addition, are to be given in weekly by the students.

In all classes in Modern Languages, there shall be as many written exercises as there are classes.

In classes of Latin and Greek three themes are to be handed in each week. See Latin (3, 6, 9), College of Letters.

All of these out-of-class exercises will be corrected by the teacher, either in class or out of it, and returned to the students.

PRIZES.

Prizes are awarded in all classes and in all subjects, to the students who are first and second in merit.

Students whose yearly average is 85 per cent or over are given distinctions.

No student is eligible for a prize who has not been present for the whole year.

EXTRAORDINARY PRIZES.

The following extraordinary prizes are open to competition on the dates announced in the University Calendar. The Faculty Committee of Scholarship and Standing reserves the right not to award any of these prizes in the absence of sufficient competition or a meritorious grade of scolarship. No one is eligible to compete a second time for a prize which he has already wcn, except after an interval of one year.

SENIOR NOBILI.

An anunal prize of $60.00 founded by Joseph A. Donohoe, Esq., in honor of the First President of Santa Clara, Fr. John Nobili, S. J., to be given to the student in University Courses who shall be deemed first in morals, obedience and in application to study.

JUNIOR NOBILI.

An annual prize of $35.00 founded by Michael H. Kelly, Esq., to be given to the student in the High School Department who shall be deemed first in morals, obedience and application.

THE ARCHBISHOP'S MEDAL.

An annual prize of $50.00, the gift of His Grace, Most Rev. Edward J. Hanna, D. D., Archbishop of San Francisco, in memory of his illustrious predecessor, Most Rev. Patrick William Riordan, D. D., for the student who shall have competed most successfully in an examination in Christian Doctrine.

THE DONAHUE PRIZE.

An annual prize of $50.00, founded in 1883 by Peter J. Donahue, to be awarded to the student who shall show the greatest

progress in the study of Latin and Greek during the session, has this year been set aside for the best Latin Composition and divided into three purses of $25.00, $15.00 and $10.00 respectively.

THE RYLAND PRIZES.

An annual prize of $25.00, the gift of Hon. C. T. Ryland of San Jose, to be given to the student who may be deemed by the University most fit for the prize, has been set aside for the student who shall be judged to have distinguished himself most in the Annual Ryland Debate between the Senate and House which constitute the Literary Congress, organized February 22, 1857. By an agreement between these societies, in alternate years one of them selects a question for the Ryland Debate and the other is allowed the choice of the side it will defend. This year the subject for debate was chosen by the Senate. To this sum John W. Ryland, Esq., B. S. '77, LL. B. '12, has added the sum of $60.00, and the prize has been divided so that the purses offered are now $50.00 for the best speaker in the debate, $25.00 as a second prize and $15.00 as a third.

THE BARCHI PRIZE.

An annual prize of $25.00 founded by Joseph M. Durney, Esq., for the best paper on such scientific subject as shall be determined by the Faculty, is divided into two purses of $15.00 and $10.00 respectively.

THE McCANN PRIZE.

Annual prizes of $15.00 and $10.00 founded in honor of Daniel B. McCann, B. S., '84, to be given for the best short story.

THE REDWOOD PRIZE.

An annual prize of $25.00 founded in 1908 by the executive committee of "The Redwood", and given for the best essay on a historical subject.

THE OWL PRIZE.

An annual prize of $25.00 founded by the directors of the former College Magazine, "The Owl", to be given to the winner of the oratorical contest in the University.

THE JUNIOR ELOCUTION PRIZES.

Annual prizes of $15.00 and $10.00 to be given to the winner of the elocution contest in the High School Department.

THE ORELLA MEDAL.

A medal of the value of $25.00, founded by Dr. Firmin R. Orella, B. S., '89, to be given to the writer of the best paper on a scientific subject.

THE DRAMATIC ART PRIZES.

Two valuable gold watches and chains, offered by friends who wish to remain unknown, to be given to the winners of the Dramatic Art Contest.

THE SILVER MEDALS FOR CONDUCT AND APPLICATION to be given to the following students who become most distinguished for good conduct and application to study:

1. The most distinguished **RESIDENT UNIVERSITY** student.
2. The most distinguished **NON-RESIDENT UNIVERSITY** student.
3. The most distinguished **RESIDENT HIGH SCHOOL** student.
4. The most distinguished **NON-RESIDENT HIGH SCHOOL** student.

DEPARTMENTS OF THE UNIVERSITY

DEPARTMENTS, CURRICULA, COURSES.

The University includes the Graduate and Undergraduate Departments.

GRADUATE DEPARTMENT.

AIM AND SCOPE.—The Graduate Department offers students who have attained the Academic Degrees, studies leading to the higher ones of Master or Doctor. The determination of these courses rests with the Committee on Post-graduate Studies. A sufficiently wide option is allowed, much of the instruction being in the form of direction along lines of original research.

Courses may be had in Philosophy, Sociology and Economics, English, Latin, Greek, and Mathematics, as well as in Pre-Medical subjects and the Professional Colleges of Law and Engineering.

Graduates who have received the degree of Bachelor of Arts or Bachelor of Science, may receive the degree of Juris Doctor on completing the course of the Institute of Law and prescribed work in Roman Law, International Law and the History of English Law. For A. M. 248, 229½ or 199 credits are required according as Law, Pre-Medical or Pedagogy electives have been taken in addition to Philosophy, History of Philosophy and Thesis, which are the special work demanded for this degree. From these thirty-four units must be selected. For Ph. B. 252, 233½, or 212 units are required after the degree of A. B. has been awarded, and 248, 229½, or 199 if B. S. has been awarded, the different number of units required being determined by the different requirements in Law, Pre-Medical and Pedagogy. The special requirement for this degree is research work in Ancient, Scholastic and Modern Philosophy to the amount of thirty-four units. For Ph. D. the requirement is the same as for Ph. B. with thirty-four ad-

ditional units of theoretical and experimental work and thesis. For Lit. B., besides the work required for A. B. thirty-four additional units in History and Criticism of English Literature and thesis are required.

UNDERGRADUATE DEPARTMENTS.

These include

A. THE COLLEGE OF PHILOSOPHY AND LETTERS.

A four years' college course, leading to the degree of Bachelor of Arts.

B. THE COLLEGE OF GENERAL SCIENCE.

A four years' college course, leading to the degree of Bachelor of Science.

C. THE INSTITUTE OF LAW.

A standard three years' course of law, leading to the degree of Juris Doctor or Bachelor of Laws, which is open also to Special students.

D. THE COLLEGE OF ENGINEERING.

(a) Architectural Engineering. A four years' course leading to the degree of Bachelor of Science in Architecture.

(b) Civil Engineering. A four years' course leading to the degree of Bachelor of Science in Civil Engineering.

(c) Mechanical Engineering. A four years' course leading to the degree of Bachelor of Science in Mechanical Engineering.

(d) Electrical Engineering. A four years' course leading to the degree of Bachelor of Science in Electrical Engineering.

Graduates who have received the degree of Bachelor of Science in Architectural Engineering, Bachelor of Science in Civil Engineering, Bachelor of Science in Electrical Engineering or Bachelor of Science in Mechanical Engineering may receive the professional degree of Architectural Engineer, Civil Engineer, Electrical Engineer or Mechanical Engineer.

One of these degrees may be conferred on a graduate of the University of Santa Clara who has been engaged in acceptable professional work for a period of not less than three years after receiving the degree of Bachelor of Science.

A candidate must declare his candidacy and file with the Dean of the College of Engineering a detailed statement covering his professional study and experience and an outline of his proposed thesis not later than December 31 preceding the commencement at which he wishes to receive the degree, and he must submit his completed thesis not later than May 10. If the statement of professional experience and study and the thesis are accepted, the candidate must present himself at commencement to receive the degree.

Residence of at least one year immediately preceding graduation is required for the granting of any degree.

E. THE SCHOOL OF PEDAGOGY.

A course of studies in Education which aims at preparing graduates of the University for capable service in the field of high school education.

F. THE PRE-MEDICAL COURSE.

A two years' course of studies in Chemistry, Biology, Histology and Embryology, which is recommended to students contemplating entrance into medical schools.

ENTRANCE REQUIREMENTS.

Applicants for admission to the Freshman Year in any College of the University must either (1) have completed the regular Four-Year High School course of the Preparatory School of the University, or (2) have completed a similar course in an accredited High School, or (3) pass an examination based on a four-year course amounting in the aggregate to sixteen units. Of these sixteen units, ten or more are prescribed and required of all applicants; the rest are elective from the list of optional subjects.

CONDITIONS.

In certain cases, at the discretion of the Committee on Entrance Standing, which shall decide on the merits of each particular case, conditions in elective branches to the amount of not more than two units may be allowed. All conditions must, however, be removed by the end of the Freshman year.

As the prescriptions in the classical languages are difficult for secondary schools to meet, two conditions may be permitted in these languages in cases of special merit.

The following is a list of the units required for entrance into the respective Colleges.

COLLEGE OF PHILOSOPHY AND LETTERS.

Subjects Prescribed.

English	3 units
History	3 units
Latin or Modern Language	4 units
Greek or Modern Language	2 units
Algebra	1½ units
Geometry	1½ units

Electives.

English	1 unit
Physics	1 unit
Chemistry	1 unit
Modern Languages	2 units
History	2 units
Trigonometry	½ unit

COLLEGE OF GENERAL SCIENCE.

Subjects Prescribed.

English	3 units
History	2 units
Modern Languages	2 units
Algebra	1½ units
Geometry	1½ units

Electives.

Physics	1 unit
Chemistry	1 unit
Modern Languages	2 units
English	1 unit
History	2 units
Trigonometry	½ unit

COLLEGE OF ENGINEERING.

Subjects Prescribed.

English	3 units
History	2 units
Modern Languages	2 units
Algebra	1½ units
Geometry	1½ units

Electives.

Physics	1 unit
Chemistry	1 unit
Modern Languages	2 units
English	1 unit
History	2 units
Trigonometry	½ unit
Algebra	½ unit

To count a "unit" a subject must be taught five times a week, in periods of not less than forty-five minutes, for a school year of not less than thirty-six weeks.

INSTITUTE OF LAW.

Entrance Requirements and Conditions of Graduation

Are fully set out on pages 128 and 136 of this catalogue.

Colleges of Philosophy and Letters and General Science

COLLEGE OF PHILOSOPHY AND LETTERS.

The College of Philosophy and Letters covers a curriculum of four years and leads to the Degree of Bachelor of Arts. It comprises courses of studies selected with special regard to their cultural value, and which, far from being of merely cultural importance, afford the most solid foundation for the learned professions and for those larger commercial pursuits characteristic of the present age, which demand intellects carefully trained by the most efficient educational instruments available. The Degree of Bachelor of Arts is awarded only to those students who in addition to other prescribed studies present a minimum of six years of Latin.

During the first two years of this curriculum the chief studies are the classical languages and literatures, English, Mathematics, Physics, Chemistry and History. In the last two years courses in Philosophy, Ethics and Economics are prescribed, and elective work, which counts as two years for the Degree of Bachelor of Arts, may be taken in the Institute of Law, in the Pre-Medical Course, in the School of Pedagogy, and other departments of the University.

COLLEGE OF GENERAL SCIENCE.

The Curriculum of the College of General Science extends over four years and leads to the Degree of Bachelor of Science. Students whose preparatory training in the classics was not sufficient to warrant their entrance into the College of Philosophy and Letters are eligible to this curriculum, in which, with the exception of the classical literatures, for which modern languages and literature are substituted, are contained all the strong studies of the curriculum of the College of Philosophy and Letters.

At the beginning of the third or Junior Year in this course students may enter the Institute of Law, the Pre-medical

Course, the School of Pedagogy or elect other studies from the University curricula to the amount of two year's work in credits for the Degree of Bachelor of Science, work in any of these departments being accepted towards the credits necessary for the degrees of A. B., B. S., LL. B., and J. D.

REQUIREMENTS FOR GRADUATION.

One credit is given for each hour's work in a subject taken during an entire semester except that for two hours laboratory work, only one credit is given.

For the degree of A. B., when the elective work of Junior and Senior years is taken in the Institute of Law, 218 credits are required for graduation; if the elective work is taken in the Pre-Medical course 199½ credits are required; and if it is taken in the School of Pedagogy 178 credits are required.

For the degree of B. S., with the Law electives, 214 credits are required, 195½ with the Pre-Medical electives and 174 with the Pedagogy electives.

The subjects in all these courses are obligatory after the choice of an elective is made and no substitution is allowed.

Theses—Before one is admitted to any degree in any Department, or to a certificate in Law, a thesis must be submitted on a subject chosen by the student with the approbation of the Committee on Theses. It must bear on the matter studied, or at least on cognate matter, and shall consist of no fewer than 5000 words. The theses should be typewritten on National White unruled paper, 8½x11 inches. The ultimate decision as to whether the effort merits the Degree rests with the Committee on Theses.

Residence of at least one year immediately preceding graduation is required for the granting of any degree.

REQUIRED COURSES.

Required Courses in the College of Philosophy and Letters and in the College of General Science.

FRESHMAN YEAR.

First Semester.

	Hours Attendance Rec.	Lab.	Credits.
English Precepts, Eng. (1)	3		3
English Composition, Eng. (5)	2		2
†Religion, Phil. Relig. (1)	2		2
History, History (1)	3		3
Public Speaking, Eng. (14)	1		1
Advanced Algebra, Math. (3) or	3		3
Plane Trigonometry, Math. (1)	3		3
Latin, Latin (4, 5, 6)	5		5
Greek, Greek (1, 3)	4		4
*Modern Language, two of either French (1), German (1), or Spanish (1)	8		8
Inorganic Chemistry, Chem. (1, 2, 3)	3	4	5

Second Semester.

	Hours Attendance Rec.	Lab.	Credits.
English Precepts, Eng. (2)	3		3
English Composition, Eng. (6)	2		2
†Religion, Phil. Relig. (2)	2		2
History, History (2)	3		3
Public Speaking, Eng. (14)	1		1
Spherical Trigonometry, Math. (2)	3		3
Latin, Latin (1, 2, 3)	5		5
Greek, Greek (2, 3)	4		4
*Modern Language, two of either French (2), German (2), or Spanish (2)	8		8
Inorganic Chemistry, Chem. (4, 5, 6)	3	4	5

*Two modern languages may be substituted for Latin and Greek in the Colleges of General Science and Philosophy and Letters.

†Required only from students professing the Catholic faith.

SOPHOMORE.

First Semester.

	Hours Attendance Rec.	Lab.	Credits.
English Precepts, Eng. (3)	3		3
English Composition, Eng. (7)	2		2
†Religion, Phil. Relig. (3)	2		2
History, History (3) or	3		3
Elementary Law, See page 129	3		3
Public Speaking, Eng. (15)	1		1
Analytic Geometry, Math. (4)	3		3
Latin, Latin (7, 9)	5		5
Greek, Greek (4, 6)	4		4
*Modern Language, two of either French (3), German (3), or Spanish (3)	8		8
Physics, Physics (1, 3)	3	4	5

Second Semester.

	Hours Attendance Rec.	Lab.	Credits.
English Precepts, Eng. (4)	3		3
English Composition, Eng. (8)	2		2
Thesis, Eng. (9)			5
†Religion, Phil. Relig. (3)	2		
History, History (4) or	3		3
Elementary Law, See page 129	3		3
Public Speaking, Eng. (15)	1		1
Analytic Geometry, Math. (5)	3		3
Latin, Latin (8, 10)	5		5
Greek, Greek (5, 6)	4		4
*Modern Language, two of either French (4), German (4), or Spanish (4)	8		8
Physics, Physics (2, 4)	3	4	5

*Two modern languages may be substituted for Latin and Greek in the Colleges of General Science and Philosophy and Letters.

†Required only from students professing the Catholic faith.

JUNIOR.

First Semester.

	Hours Attendance Rec.	Lab.	Credits.
Logic, Phil. (1)	5		5
Ontology, Phil. (2)	3		3
Philosophy of Religion, Phil. Relig. (4)	2		2
Political Economy, Pol. Econ. (1)	2		2
Elective; Law, Law (1, 4, 6, 7, 8) Page 130	14		14
Elective; Pre-Medical, Pre-Med. (1a, 1b, 2a), See page 149	6	8	10
Elective; Pedagogy, Ped. (1, 2), See page 144	4		4

Second Semester.

	Hours Attendance Rec.	Lab.	Credits.
Psychology, Phil. (3)	8		8
Philosophy of Religion, Phil. Relig. (4)	2		2
Political Economy, Pol. Econ. (2)	2		2
Elective; Law, (2, 3, 5, 7, 8) See page 130	14		14
Elective; Pre-Med. (1a, 1b, 1c, 2b), See page 149	6	8	10
Elective; Pedagogy, Ped. (3, 4) See page 145	4		4

SENIOR.

First Semester.

	Hours Attendance Rec.	Lab.	Credits.
Ethics and Theodicy, Phil. (3)	8		8
Political Economy, Pol. Econ. (3)	2		2
Philosophy of Religion, Phil. of Relig. (5)	2		2
Elective; Law, See page 131	14		14
Elective; Pre-Med. (3a, 3b, 5a, 5b), See pages 151, 152	4	7	7½
Elective; Pedagogy, Ped. (5, 6), See page 145	4		4

Second Semester.

	Hours Attendance Rec.	Lab.	Credits.
Ethics and Theodicy, Phil. (4)	8		8
Political Economy, Pol. Econ. (4)	2		2
Thesis, Phil. (6)			5
Philosophy of Religion, Phil. Relig. (5)	2		2
Elective; Pre-Medical (3a, 4a, 4b, 5a, 5b), See pages 151, 152	5½	9	10
Elective; Law, See page 131	14		14
Elective; Pedagogy, Ped. (6, 7) See page 145	4		4

THIRD YEAR OF LAW.

Subjects and time allotment will be found on page 131.

PHILOSOPHY.

(1) LOGIC.

Five Credits. **Five Hours. One Semester.**

(a) Dialectics. Simple Apprehensions. Terms—their Supposition, definition and division. Judgments. Propositions —Classification according to Quantity and Quality; Opposition, Equivalence, Conversion, Reasoning,—underlying Principles. The Syllogism; its Laws and Species. Induction. Method. The Circle.

(b) Critics. Logical Truth and Falsity. States of the mind as to truth. Certitude: Degrees, Elements, Kinds. Scepticism, Universal and Partial. Consciousness. The Senses. Nominalism, Conceptualism, Realism, Ultra-Realism. Testimony. Tradition, History. The New Criticism. Reason and Revelation. The Ultimate Motive of Certitude. Evidence. Shallo's Scholastic Philosophy.

(2) BASIC ONTOLOGY.

Three Credits. **Three Hours. One Semester.**

(a) **Basic Ontology.** Being. Analogy. Axioms. Unity, Identity, Distinction—Real and Logical. Truth. Goodness, Evil. Act and Potentiality. Essence and Existence. Possibility, Extrinsic, Intrinsic. Sources of the latter. Substance—Complete, Incomplete. Hypostasis, Person. Accident—Absolute, Relative. The Categories of Aristotle.

(b) **Ontology and Etiology.** The Principle. The Cause. The Condition. The Occasion. Matter—Primordial and Secondary. Form—Substantial, Accidental. Efficiency and Action. Finality. The Order of Intention and the Order of Achievement. The Exemplar. Grades of Perfection. Beauty.

(c) **Cosmology.** Qualities of Bodies. Quantity—Discrete and Continuous. Mathematical Divisibility. Formal Effect. Impenetrability. Space. Place. Change—Substantial, Accidental. Motion and Time. Laws of Nature. Atomism, Dynamism, Hylomorphism.

(d) **Biology.** Organic Life Defined. Vegetable Functions. The Vital Principle of the Plant. Its Superiority to Anorganic Forces. Sensation,—External, Internal. Imagination, Memory, Instinct, Sleep. The Rank of the Animal Soul. Origin of Species. Theory of Independent Formations. Monistic Evolution. Darwinism.

Text for (a), (b), (c) and (d) Shallo's Scholastic Philosophy.

(3) PSYCHOLOGY.

Eight Credits. **Eight Hours. One Semester.**

(a) The Intellect. Genesis of Ideas. Self-consciousness. Judgement and Reasoning. Hypothesis of Innate Ideas. Empiricism. Ontologism. (b) The Will. Freedom. Arguments. Control over Faculties. (c) The Soul. Substantiality, Simplicity, Spirituality, Immortality. The Unity of Each Individual. Union of Body and Soul. Origin of the

Human Soul. Traducianism. Creationism. Pre-existentianism, Unity and Antiquity of the Race. Maher's Psychology.

(4) THEODICY AND GENERAL ETHICS.

Eight Credits. **Eight Hours.**
One Semester.

(a) Existence and Nature of God. (a) Metaphysical, Physical, Moral Proofs. Aseity. Infinity, Immensity. (b) Life of God. Intelligence. The Futuribles. Will—Primary and Secondary Object. Moral and Physical Evil. (c) Action of God in the Universe. Creation, Conservation, Concurrence, Providence. Miracles.

(b) General Ethics. Nature, Object, Necessity of Ethics. Teleology, Beatitude. Human Acts. Voluntary and Involuntary Acts. Morality of Human Acts and its Determinants. Passions. Habits. Moral Obligation and its Origin. Eternal Law. Natural Law. Sanction of Law. False Norms of Morality. Utilitarianism. Hedonism. Altruism. Rickaby's Moral Philosophy.

(5) SPECIAL ETHICS.

Eight Credits. **Eight Hours.**
One Semester.

Duties, Worship. Internal and External Worship, False Worship. Homicide. Self-defense. Suicide. Dueling. Veracity. Charity. Rights. Private Ownership. Communism. Socialism. Agrarian Socialism. Henry George. Herbert Spencer. Capital and Labor. Domestic Society. Matrimony. Divorce. Celibacy. Parental Authority, Education. Relation of Master and Servant. Civil Society its Nature and Origin. False Theories of Hobbes, Rousseau, Locke. Forms, Scope, Aim, Functions of Civil Government. Suffrage. Liberty of Opinion, of the Press, of Worship, of Association. International Law. Church and State. Rickaby's Moral Philosophy.

(6) THESIS.

Five Credits.

A thesis of at least 5000 words on a subject chosen by the

student with the approval of the Dean of the Faculties and the Professor. The thesis will be governed by the general regulation for theses on page 49. Its acceptance by the Faculty is a necessary pre-requisite for taking the oral examination in this department.

POLITICAL ECONOMY.

(1) DEFINITION.

One Credit. **Two Hours.**
One-Half Semester.

Method. Schools. Wealth. Value, Price. Production and Factors of Production. Exchange. Burke, Political Economy.

(2) MONEY AND PRICES.

Two Credits. **Two Hours.**
One-Half Semester.

Gresham's Law. Bimetallism and Monometallism. Inflation. Contraction. Depreciation. Multiple Tender. Credit. Burke, Political Economy.

(3) BANKS AND BANKING

One Credit. **Two Hours.**
One-Half Semester.

The Banking system of the United States and those of some other countries. Remedies for the present system of banking. International Trade. Balance of trade and accounts. Protection and Free Trade. Transportation. Railroads. Government Ownership. Corporations. Trusts. Burke, Political Economy.

(4) REVENUE.

One Credit. **Two Hours.**
One-Half Semester.

Taxation. Public Debts, Insurance. Spending. Saving. Poverty. Distribution. Rent. Interest. Profits. Wages. Burke, Political Economy.

SOCIOLOGY.

(1) SOCIALISM AND TRADE UNIONS.

One Credit. **Two Hours.**
One-Half Semester.

A lecture course dealing with the history, development and trend of Socialism and Trade Unionism. This course involves copious collateral reading and the verification of inferences by investigation into the aspirations and methods of present day representatives of the movements studied.

(2) CAPITALISM.

Two Credits. **Two Hours.**
One Semester.

A course dealing with the history of accumulated private wealth, especially in its present day forms and characteristics.

(3) CONDITION OF THE WAGE EARNERS.

One Credit. **Two Hours.**
One-Half Semester.

This course examines the actual condition of the working classes and implies an investigation into the helpful and hindering influences which affect the workers and the consideration of the efficacy of present day methods for the betterment of the condition of the wage earners.

(4) CO-OPERATION, COMPETITION AND COMBINATION.

One Credit. **Two Hours.**
One-Half Semester.

A more critical and profound examination into the basic principles of present day economic institutions and of the reforms suggested to remedy their defects.

PHYSICS.

(1) MECHANICS, MOLECULAR PHYSICS, SOUND.

Three Credits. **Three Hours.**

One Semester.

General principles of matter. General properties of Bodies. Equilibrium. Gravity. The balance. Laws of falling bodies. Pendulum. Properties peculiar to Solids. Hydrostatics. Capillarity, endosmose, diffusion, absorption. Hydro-dynamics. The properties of gases. Aerodynamics. Production, propagation and reflection of sound. Measurement of the number of vibrations. The physical theory of music. Reed & Guthe's College Physics.

(2) LIGHT, HEAT, ELECTRICITY.

Three Credits. **Three Hours.**

One Semester.

Transmission, velocity, intensity and reflection of light. Mirrors. Single refraction. Lenses. Dispersion and achromatism. Optical instruments. The eye. Sources of light. Phosphorescence. Double refraction. Interference and polarization. Properties of magnetism. Methods of magnetism. Laws of magnetic action. Terrestrial magnetism. Fundamental principles of frictional electricity. Quantitative laws of electric action. Distribution. Electrostatic induction of influence. Electric machines. Condensation of electricity. Voltaic cell. Its modifications. Magnetic field due to current. Galvanometers. Ohm's law. Conversion of electric energy into heat. Thermo-electricity. Electro-dynamics. Electro-magnets. Magnetization of iron. Telegraphy. Electro-magnetic induction. Passage of electricity through gases. Magneto- and dynamo-electric machines. Diamagnetism. Connection between electricity and light. Physiological action of the current. Animal electricity. Reed & Guthe's College Physics.

(3) PHYSICAL MEASUREMENTS.

Two Credits. **Four Hours.**
One Semester.

The use of scales. The straight and barometer vernier. The spherometer. Micrometer wire gauge. The Cathetometer. The micrometer and compound microscope. Angular measurements. The circular vernier, the optical lever. Poggendorff's method and the spirit level. Estimation of mass. General theory of the balance. Weighing by vibrations. Exact weights and errors in weighing. Measurement of area and volume. Determination of density. Relative densities. Elasticity, tenacity and capillarity. Determination of atmospheric pressure. Time, gravitation and moments of inertia. Pendulum. Determination of gravity by Kater's and Bessel's method. Determination of the velocity and pitch of sound. Reed & Guthe's Manual of Physical Measurements.

(4) PHYSICAL MEASUREMENTS.

Two Credits. **Four Hours.**
One Semester.

Elementary electro-statics. Electrification by friction, conduction and induction. Magnetism. Determination of horizontal force and magnetic moment. Fundamental experiments in Voltaic electricity. The galavanoscope and the galvanometer. Determination of E. M. F. Wheatstone's bridge. Calibration of galvanoscope. Measurements of resistance. The high resistance differential astatic galvanometer. Measurement of galvanometer resistance. Thomson's method. Differential method. Use of slide meter bridge. Carey Foster's method. Measurement of very low resistances. The method of comparison of potentials, projection of equal potentials and auxiliary conductors. Measurement of high resistances. The direct deflection method. Electrolyte resistance. Electrolytic resistance by alternating currents. The tangent galvanometer. Use of the standard galvanometer and the determination of E. M. F. Application of Joule's law. Use of potention galvanometer. Determination of the

magnetic elements. Electro-magnetism and electro-magnetic induction. Action of linear current on magnet. Biot and Savart's law. Proof of electro-magnetic laws. Magnetic action of a solenoid. Laws of the electro-magnet. Induction experiments. Hughes' induction balance. Damping. Comparison of resistance by magneto conductor. Use of earth inductor. Study of magnetic distribution. The condenser. Determination of the absolute capacity of a condenser. Electrometers. Reed & Guthe's Manual of Physical Measurements.

MATHEMATICS.

(1) PLANE TRIGONOMETRY.

Three Credits. **Three Hours. One Semester.**

A course in Plane Trigonometry with many applications so as to give a thorough review of algebra and geometry. Practical problems. Wentworth's Plane & Spherical Trigonometry.

(2) SPHERICAL TRIGONOMETRY.

Three Credits. **Three Hours. One Semester.**

A brief course intended to familiarize the student with Spherical Trigonometry and some of its applications. Wentworth's Plane and Spherical Trigonometry.

(3) COLLEGE ALGEBRA.

Three Credits. **Three Hours. One Semester.**

A course containing the usual matter and methods of Advanced Algebra, special attention being given to graphical methods. Hawkes' Advanced Algebra.

(4) ANALYTIC GEOMETRY.

Three Credits. **Three Hours.**
One Semester.

A course covering the general principles and more practical applications of Plane Analytic Geometry. Smith & Gale, Elements of Analytic Geometry.

(5) ANALYTIC GEOMETRY AND CALCULUS.

Three Credits. **Three Hours.**
One Semester.

A brief course of Solid Analytic Geometry and elementary Calculus intended to acquaint the student with the methods of higher mathematics. Smith & Gale, Elements of Analytic Geometry.

(6) DIFFERENTIAL CALCULUS.

Three Credits. **Three Hours.**
One Semester.

A course intended for Juniors not taking either Law or Pre-Medical and covering thoroughly the theoretical parts of the subject. Murray's Calculus.

(7) INTEGRAL CALCULUS.

Three Credits. **Three Hours.**
One Semester.

A course similar to course 6 in Integral Calculus. Murray's Calculus.

For other Courses in Mathematics cf. The College of Engineering.

CHEMISTRY.

(1) GENERAL AND INORGANIC CHEMISTRY.

Three Credits. **Three Hours.**
One Semester.

Discussion of Fundamental Laws, Mathematics of Chemistry. Ordinary elements studied from the standpoint of the periodic law. McPherson & Henderson, College Chemistry.

(2) LABORATORY.

Two Credits. **Four Hours.**
One Semester.

Practical demonstration of laws and theories enunciated in Course 1. Newth's Manual of Chemical Analysis.

(3) ANALYSIS A.

One Credit. **Four Hours.**
One-Half Semester.

Dry methods of analysis; detection of metals, non-metals and acid radicals. Use of blowpipe.

(4) GENERAL AND INORGANIC CHEMISTRY.

Three Credits. **Three Hours.**
One Semester.

The ordinary and rarer elements from the standpoint of the periodic law. Metallurgy, with particular adaption to the needs of Engineering Students. McPherson & Henderson, College Chemistry.

(5) LABORATORY.

One Credit. **Four Hours.**
One-Half Semester.

Practical demonstration of principles discussed in Course 4. Manufacture of Iron, Steel, Cement, Gas, Lubricators, Distillate, Pigments, and Alloys. Newth's Manual of Chemical Analysis.

(6) ANALYSIS B.

One Credit. **Four Hours.**
One-Half Semester.

Qualitative and quantitative analysis. Gravimetric, volumetric and electrolytic methods. Preparation of normal solutions. Fire Assay methods. Newth's Manual of Chemical Analysis.

(7) ORGANIC CHEMISTRY.

Six Credits. **Three Hours.**
Two Semesters.

Constitution, classification, decomposition and synthesis of organic compounds. Homologous Series. Paraffins and derivatives. Hydroxy-acids. Carbohydrates. Kinds of Isomerism. Mixed compounds containing Nitrogen. Unsaturated compounds. Olefins, Acetylenes and principal derivatives. Aromatic compounds. Benzine and derivatives. Phenyl-Methanes and analine dyes. Hydrocarbons containing two Benzene residues. Glucosides, Proteins and Alkaloids. Remsen's Organic Chemistry.

(8) EXPERIMENTAL ORGANIC CHEMISTRY.

Two Credits. **Four Hours.**
One Semester.

Detection of carbon, hydrogen, nitrogen, chlorine, sulphur and phosphorus in organic compounds. Practical demonstration of properties, tests, combinations and decompositions of organic compounds. Preparation and study of typical organic substances. Special reference to methods of physiological Chemistry.

This course accompanies Course 7. Newth's Manual of Chemical Analysis.

(9) EXPERIMENTAL CHEMISTRY II.

Two Credits. **Four Hours.**
One Semester.

Gravimetric analysis. Preliminary manipulations. Typical determinations of metals and of acids. Electrolytic method of analysis. Volumetric analysis. Standard and normal solutions. Indicators. Calibration of vessels. Methods based upon saturation, oxidation and reduction, precipitation. Gas analysis. Estimation of carbon, hydrogen, nitrogen, chlorine, sulphur, phosphorus, and organic compounds. Determination of molecular weights. Newth's Manual of Chemical Analysis.

ENGLISH.

(1) ENGLISH POETRY.

Three Credits. **Three Hours. One Semester.**

Its nature and kinds, especially the epic, the drama, the lyric. Metre and verse.

(2) ARGUMENTATION AND ORATORY.

Three Credits. **Three Hours. One Semester.**

Invention, arrangement, and development of thought; a course presenting the principles of reasoning and persuasion.

(3) RHETORIC.

Three Credits. **Three Hours. One Semester.**

Exposition and description. The Essay. Sources and presentation of material.

(4) NARRATION.

Three Credits. **Three Hours. One Semester.**

The Short Story. The Novel.

(5) COMPOSITION.

Two Credits.

Practice in verse composition of the simpler forms. Three themes and one longer composition are submitted weekly to the Professor for correction and criticism.

(6) COMPOSITION.

Two Credits.

Exercises in brief-making and the writing of speeches. Three themes and one longer composition are required weekly, and two speeches of considerable length each semester.

(7) COMPOSITION.

Two Credits. **Two Hours.**
One Semester.

Essays and exercises in exposition and description. One essay and three exercises are to be done each week.

(8) COMPOSITION.

Two Credits. **Two Hours.**
One Semester.

Three exercises in narration each week. Three short stories during the course.

(9) THESIS.

Five Credits.

A thesis of at least 5000 words on a subject chosen by the student with the approval of the Dean of the Faculties and the Professor. The theses will be governed by the general regulation for theses on page 49. Its acceptance by the Faculty is a necessary pre-requisite for taking the oral examination in this department.

(10) ENGLISH LITERATURE.

Two Credits. **Two Hours.**
One Semester.

From the earliest period to the Norman Conquest. Lectures and recitations.

(11) ENGLISH LITERATURE.

Two Credits. **Two Hours.**
One Semester.

From the Norman Conquest to 1780. Lectures and recitations.

(12) ENGLISH LITERATURE.

Two Credits. **Two Hours.**
One Semester.

From 1780 to 1830. Rise and Development of the Comedy and Drama. Lectures and recitations.

(13) ENGLISH LITERATURE.

Two Credits. **Two Hours.**
One Semester.

From 1830 to the present time. Lectures and recitations. American Literature. Development of English fiction. Critical analysis and study of the characteristic features of selected authors.

(14) PUBLIC SPEAKING AND INTERPRETATION.

Two Credits. **One Hour.**
Both Semesters.

The Voice, Enunciation, Inflection. Tone-Color. Gesture.

(15) PUBLIC SPEAKING.

Two Credits. **One Hour.**
Both Semesters.

A continuation of Course 14.

(16) ORAL EXAMINATION.

On the subject matter of courses 1, 2, 3, 4, 10, 11, 12, 13, 14, 15. The examination lasts 20 minutes and is a pre-requisite for the granting of any credit in this department.

LATIN.

(1) VIRGIL—THE AENEID.

Four Cerdits. **Four Hours.**
One Semester.

After reading books VII—XII, the poem will be studied as a whole, special attention being given to the sources, to the epic technique and literary art of Virgil and to the tracing of his influence in the literature of the world.

(2) RAPID READING.

One Credit. **One Hour.**
One Semester.

A course intended to give to the student a broad knowl-

edge of Roman life and literature and to facilitate the study of Latin sources.

(3) LATIN COMPOSITION, 1.

One Credit. **One Hour.**
One Semester.

Narration and descriptive composition based chiefly on the text of the Aeneid and implying a discrimination of the vocabulary and syntax of prose and verse. Students will write three compositions weekly.

(4) THE LATIN HISTORIANS.

Four Credits. **Four Hours.**
One Semester.

Copious readings in Sallust, Curtius, Pliny and Livy, with critical consideration of the historical works of these writers and collateral reading directed to reach an appreciation of their place in Latin literature.

(5) RAPID READING, 2.

One Credit. **One Hour.**
One Semester.

The complete works of Tacitus will be read in this course.

(6) LATIN COMPOSITION, 2.

One Credit. **One Hour.**
One Semester.

A continuation of Course 3, but based on the Latin historians.

(7) CICERO.

Three Credits. **Three Hours.**
One Semester.

The orations studied as models of oratorical art; rapid reading, analysis, discussion, criticism.

(8) HORACE.

Three Credits. **Three Hours.**
One Semester.

The Odes, Books I—IV, will be read and carefully studied. Students will memorize selected odes and portions of odes. Such phases of Roman life as are suggested will be the subject of collateral reading under the direction of the professor.

(9) LATIN COMPOSITION.

Two Credits. **Two Hours.**
One Semester.

Written work on subjects assigned by the professor will be required three times a week. Students will be expected to show facility and elegance of diction in their written work.

(10) THESIS.

Five Credits.

At the beginning of the second Semester of the Sophomore year, the professor after consulting with the students shall assign to each a thesis implying copious reading in Latin. The Thesis must be typewritten and contain at least 6000 words.

(11) ORAL EXAMINATION.

The examination is upon Courses 7 and 8, lasts for 15 minutes and is a pre-requisite for obtaining any credit in this department.

GREEK.

(1) SIMPLE GREEK PROSE.

Four Credits. **Four Hours.**
One Semester.

Selections are taken from Plato, Chrysostom, Gregory, Nazianzen and the Iliad. This course is open to those who have completed the course of Elementary Greek.

(2) SIMPLE GREEK POETRY.

Four Credits. **Four Hours.**
One Semester.

Elegies of Gregory Nazianzen, Idyls of Theocritus, selected portions of the Odyssey. In this course, Greek life and customs are studied in detail, and special attention is given to the various dialects.

(3) SIMPLE GREEK COMPOSITION.

Two Credits. **One Hour.**
Both Semesters.

Systematic training in the writing of simple Greek, founded on the authors studied in Courses 1 and 2.

(4) GREEK LITERATURE, I.

Four Credits. **Four Hours.**
One Semester.

Reading of selected portions of Sophocles, Pindar, and Euripides. In this course special attention is given to the Greek epic as a whole, and Greek tragedy and lyric poetry are studied in detail.

(5) GREEK LITERATURE, II.

Four Credits. **Four Hours.**
One Semester.

Representative types of the Grecian orators, Chrysostom, Basil, Demosthenes, will be carefully read and studied as a whole.

(6) RAPID READING.

One Credit. **One Hour.**
Both Semesters.

Sight reading of the easier portions of the Greek historians. and written compositions in imitation.

(7) ORAL EXAMINATION.

The examination is upon Courses 4 and 5, lasts ten minutes, and is a pre-requisite for obtaining any credit in this department.

HISTORY.

(1) EUROPEAN HISTORY, 1305-1563.

Three Credits. **Three Hours. One Semester.**

Exile of the Papacy and the Great Western Schism. The Hundred Years War. The Wars of the Roses. Consolidation of the European Monarchies. The Inquisition. The Renaissance. General character of the period. The Age of Charles V. The Protestant Revolution and the Catholic Revival.

(2) EUROPEAN HISTORY, 1563-1714.

Three Credits. **Three Hours, One Semester.**

The Huguenot War in France. Philip II., Mary Stuart and Elizabeth. The Thirty Years War. The Puritan Revolution. The Age of Louis XIV.

(3) EUROPEAN HISTORY, 1714-1800.

Three Credits. **Three Hours, One Semester.**

The Hanoverian Succession. The making of Prussia. Maria Teresa and Frederick II. Wars of the Succession. The colonies in North America. The Seven Years War. The Division of Poland. Progress of the Political and Social Revolution of the Eighteenth Century. The American War of Independence. The French Revolution.

(4) EUROPEAN AND AMERICAN HISTORY, 1800.

Three Credits. **Three Hours, One Semester.**

The Era of Napoleon I. Catholic Emancipation in Great Britain. The Revolution of the Barricades and of the Cabinet. The Civil War in the United States and its causes. The Domination of Prussia and the German Empire. Our own times.

Lectures on the moral, political, economic, and social aspects of these periods of history, are given three times each week. The subjects enumerated are studied in detail.

PHILOSOPHY OF RELIGION, EVIDENCES, MORALS.

(1) THE ESSENTIALS OF CHRISTIAN DOCTRINE, I.
Two Credits. Two Hours, One Semester.

Various Creeds. The Apostle's Creed. Each Article of the Creed is studied in particular, attention being given to any subject bearing directly on these articles, as Sin, The Powers of the Church, Infallibility, etc. Martin's Catholic Religion.

(2) THE ESSENTIALS OF CHRISTIAN DOCTRINE, II.
Two Credits. Two Hours, One Semester.

The Law of God. What is commanded or forbidden by the Decalogue is studied in detail. The Precepts of the Church, Grace, Prayer, and each of the Seven Sacraments together with collateral subjects. Martin's Catholic Religion.

(3) TRUTH OF THE CATHOLIC RELIGION.
Four Credits. Two Hours, Both Semesters.

(a) CHRISTIANITY A REVEALED RELIGION. What Religion is. What Revelation is. Kinds of revelations. What revelation necessary to know truths above human ken. Man's attitude toward Revelation. Primitive, Patriarchal, Mosaic Revelation. The Divine origin of Pre-Christian Revelation. The Christian Revelation; its origin, evidences of the divinity of its origin.

(b) THE CHURCH. THE DISPENSER OF THE CHRISTIAN RELIGION. Institution of the Church. End of the Church. Constitution of the Church. Marks of the Church. The teaching office of the Church. Sources of the Church's teaching. The Rule of Faith. Wilmer's Handbook of the Christian Religion.

(4) CHRISTIAN DOGMA.
Four Credits. Two Hours, Both Semesters.

(a) GOD THE AUTHOR AND RESTORER OF OUR SALVATION. The existence, nature, and attributes of God. The

Divine Trinity. God the Creator of the universe. Various grades of creation. The spiritual and material world. Man. Relation of different orders of creation to one another. God the Redeemer of fallen man. Decree and plan of redemption. The Redeemer,—one person and two natures. The work of redemption.

(b) **THE PLAN OF REDEMPTION AS REALIZED IN INDIVIDUALS.** Grace, actual, habitual or sanctifying. The Sacraments as a means of Grace. The Sacraments are studied in general—their matter and form,—their efficacy and the dispositions requisite to receive them validly and with fruit. Then each Sacrament is studied in detail. The Church as a means of salvation. The four last things. Wilmer's Handbook of the Christian Religion.

(5) **CHRISTIAN MORALS.**

Four Credits. **Two Hours, Both Semesters.**

(a) **CHRISTIAN MORALS IN GENERAL.** Law as the objective norm of human actions. Conscience as the subjective norm of human actions. The conditions of morality. Moral good and moral evil.

(b) **CHRISTIAN MORALS IN PARTICULAR.** The Christian's duties toward God,—Faith, Hope, Charity. Religion. Direct and indirect acts of worship. The Church as the controller of religious worship. Duties towards ourselves and our neighbor,—general and parcticular.

(c) **WORKS OF SUPEREROGATION OR CHRISTIAN PERFECTION.** Wilmer's Handbook of the Christian Religion.

MODERN LANGUAGES.

FRENCH.

(1) **ELEMENTARY FRENCH, I.**

Four Credits. **Four Hours, One Semester.**

In this course the student is carefully drilled in elementary

grammar up to the irregular verbs, attention also being given to acquiring a vocabulary of the more common words.

(2) ELEMENTARY FRENCH, II.

Four Credits. **Four Hours, One Semester.**

A continuation of the preceding course. Special attention is given to the more important irregular verbs, the memorizing of words, and translation of French into English and vice versa.

(3) INTERMEDIATE FRENCH, I.

Four Credits. **Four Hours, One Semester.**

A thorough review of grammar and syntax. The object of this course is to acquaint the student with the scientific vocabulary and enable him to read the more simple scientific French.

(4) INTERMEDIATE FRENCH, II.

Four Credits. **Four Hours, One Semester.**

This course continues the work begun in Course 3. Regular exercises are given in written work, and copious reading is made from the standard scientific works in order to fit the student for professional reading.

(5) ADVANCED FRENCH, I.

Four Credits. **Four Hours, One Semester.**

A thorough review is made of Courses 1 and 2, by means of conversational exercises, sight reading and written exercises. Selections are read from the more noted French writers.

(6) ADVANCED FRENCH, II.

Four Credits. **Four Hours, One Semester.**

A continuation of Course 5, with conversational exercises and copious readings from the French authors.

GERMAN.

(1) ELEMENTARY GERMAN, I.

Four Credits. **Four Hours, One Semester.**

Elements of German Grammar. Drill in pronunciation. Vocabulary.

(2) ELEMENTARY GERMAN, II.

Four Credits. **Four Hours, One Semester.**

A continuation of Course I. Syntax, Oral and written exercise. Reading from more simple German prose.

(3) INTERMEDIATE GERMAN, I.

Four Credits. **Four Hours, One Semester.**

Review of syntax. Translation. Oral and written exercises. Reading from German scientific works to acquire a technical vocabulary.

(4) INTERMEDIATE GERMAN, II.

Four Credits. **Four Hours, One Semester.**

Reading and written and oral exercises in technical German. This course aims at preparing the students to undertake the reading of the more difficult scientific works.

(5) ADVANCED GERMAN, I.

Four Credits. **Four Hours, One Semester.**

A study of the German prose authors with copious selected reading.

(6) ADVANCED GERMAN, II.

Four Credits. **Four Hours, One Semester.**

A more extensive course in German literature, especially in German poetry.

SPANISH.

(1) ELEMENTARY SPANISH, I.

Four Credits. **Four Hours, One Semester.**

Elements of Spanish grammar. Drill in pronunciation, Vocabulary.

(2) ELEMENTARY SPANISH, II.

Four Credits. Four Hours, One Semester.

A continuation of Course 1. Syntax, oral and written exercises. Reading from the simpler Spanish prose.

(3) INTERMEDIATE SPANISH, I.

Four Credits. Four Hours, One Semester.

Review of grammar and syntax. Translation. Oral and written exercises. Reading of somewhat difficult Spanish prose.

(4) INTERMEDIATE SPANISH, II.

Four Credits. Four Hours, One Semester.

Reading, written and oral exercises.

(5) ADVANCED SPANISH, I.

Four Credits. Four Hours, One Semester.

A study of Spanish prose authors with copious reading.

(6) ADVANCED SPANISH, II.

Four Credits. Four Hours, One Semester.

Spanish Poetry.

College of Engineering

COLLEGE OF ENGINEERING

The foundation of the College of Engineering in the University of Santa Clara was the result of repeated and urgent requests that opportunities should be given young men ambitions to follow the Engineering profession, to pursue and complete the studies leading to it in an environment and atmosphere conducive as well to deep persevering study as to cultural and moral development.

To meet this demand, the Faculty of the University has added sound and thorough courses in Architectural, Civil, Electrical and Mechanical Engineering. Each of these departments is in the hands of experienced and practical engineers who devote their whole time and attention to the success of their work. As is traditional at Santa Clara, students in Engineering are given individual care, assistance, advice and encouragement. The work exacted is of the highest type; nevertheless, owing to this individual care and to the judicious admission of students as well as the prompt elimination from the various departments of students found to be inadequately prepared in fundamental studies or in seriousness of purpose, there is very little likelihood and no excuse for failure on the part of the student.

The demand for engineers is today greater than ever before. Owing to the vast extent of our State and of the neighboring States, as well as of Alaska on the North and the great Mexican and Central American Republics on the South, with which California is intimately connected, and owing moreover to the fact that these countries are as yet comparatively undeveloped and that California, on account of her unexcelled climate and almost unlimited natural sources of power, is bound to take her place among the foremost manufacturing states of the Union, it is evident that this demand for first class engineers will go on increasing for many decades to come. Logically it is California that should supply a very

great proportion of this demand. The young men of our State have, therefore, a most powerful incentive to enter the engineering profession in its various branches, in which, granted a broad and thorough preparation, they are assured of success.

That this preparation can be given by mere trade schools is no longer contended. The engineer today must be more than a machinist, electrician or surveyor. He can no longer be a self-made man in the old sense. His mind must possess the acumen and culture which only a broad college training and college association can give, and his acquaintance with and love of mathematics and science should be the foundation on which his knowledge of their technical applications is based.

This is the ideal which Santa Clara cherishes for the engineers who shall receive their education from her.

COURSES.

Four year Courses are offered leading to the degrees of Bachelor of Science in Architectural Engineering, Bachelor of Science in Civil Engineering, Bachelor of Science in Electrical Engineering and Bachelor of Science in Mechanical Engineering. These courses aim, first, to give the student a thorough knowledge of the sciences on which all Engineering is based, second, to develop his ability to acquire accurate information, third, to develop his judgment by practical work so that he may be able to use his knowledge and information to the best advantage.

ARCHITECTURAL ENGINEERING.

The Course in Architectural Engineering gives facility in the application of the fundamental principles of beauty and strength to buildings. Architectural forms and principles and their application in Architectural designs are taken up, together with the strength of materials and the design of trusses, columns and reinforced concrete, the whole enabling

the student to produce correct, beautiful and economical works of Architecture.

CIVIL ENGINEERING.

Civil Engineering covers the field of structural work (steel, concrete and stone buildings and bridges), municipal engineering (roads, pavements and sewers), water power development, irrigation and railroad construction. These are all based on the fundamental sciences of Mathematics, Physics and Chemistry, and as much practice as possible is given to facilitate the application of these sciences to professional work.

ELECTRICAL ENGINEERING.

Electrical Engineering has to do with the design and construction of electrical machinery and the various applications of electricity to the arts. Electrical and Mechanical Engineering are so closely interrelated that the courses of the first three years are the same, and it is only the Senior courses, such as Telephony and pure Electrical design, that are differentiated from the Mechanical Engineering courses.

MECHANICAL ENGINEERING.

Mechanical Engineering may be divided into three closely related lines, Design, Manufacturing and Power Generation. The courses in Design begin with mechanical drawing and continue with a study of mechanisms, strength of materials stresses in, adaptability, cost, and commercial worth of machines. Manufacturing has to do with the organization of commercial enterprise, systems of works management, efficiency systems, cost of materials and power and layout of machinery in a factory for maximum output. The subject of Power Generation is covered by courses on steam and gas engines, turbines, boilers, water motors and electric generators, together with the proper operation of all classes of machinery and the application of power to them.

ENTRANCE REQUIREMENTS.

Applicants for admission to the Freshman Year of the College of Engineering must either (1) have completed the regular Four-Year High School course of the Preparatory School of the University, or (2) have completed a similar course in an accredited High School, or (3) pass an examination based on a four-year course amounting in the aggregate to sixteen units. Of these sixteen units, ten or more are prescribed and required of all applicants; the rest are elective from the list of optional subjects.

SUBJECTS PRESCRIBED.

English	2	units
History	2	units
Modern Languages	2	units
Algebra	1½	units
Geometry	1½	units
Physics	1	unit

ELECTIVES.

Chemistry	1	unit
Modern Languages	2	units
English	1	unit
History	2	units
Trigonometry	½	unit
Algebra	½	unit

To count a "unit" a subject must be taught five times a week, in periods of not less than forty-five minutes, for a school year of not less than thirty-six weeks.

CONDITIONS.

In certain cases, at the discretion of the Committee on Entrance Standing, which shall decide on the merits of each particular case, conditions in elective branches to the amount of not more than two units may be allowed. All conditions must, however, be removed by the end of the Freshman year.

Every applicant should forward his application to the

President, enclosing a certificate of the studies he has completed with a testimonial as to his character and diligence, signed by the Principal of the school last attended.

The articles which each student who comes to reside at blankets, two pairs of sheets, three pillow cases, two counterthe University should bring with him are, more or less: two panes, a sufficient number of shirts, drawers, handkerchiefs, socks, shoes, napkins, towels, combs, brushes, etc., all marked distinctly and imperishably with his name.

Promptness in reaching the University on the day fixed for the opening of classes is necessary. It is essential that Parents and Students understand this clearly from the beginning of their connection with the University, as promptness in returning from vacations and recesses, which is requisite in order to prevent the loss of valuable time and the forming of habits of procrastination and negligence of duty, is strictly insisted on.

REQUIREMENTS FOR GRADUATION.

CREDITS.

In all of the groups of the College of Engineering, 176 credits are required for graduation. A credit is given for each one-hour recitation, or lecture (requiring one hour preparation) per week, carried satisfactorily for one semester, or for two hours per week, spent in laboratory, drawing room or shop, for one semester.

REQUIRED SUBJETS.

At least two summer vacations must be spent on engineering work before graduation. A detailed report of this work, containing at least three hundred words, must be handed to the Dean of the College of Engineering within one month of the opening of the first semester.

The subjects required for graduation are given under appropriate headings on the following pages.

GRADES.

Semester grades are expressed on a basis of 100 for perfect work.

70 is required for passing.

60-70 indicates a condition.

Below 60 indicates a failure.

A student making 70 or more in any course is given the credits for that course. If he makes from 60 to 70 he must pass a satisfactory examination at the time set for condition examinations or receive a failure in the subject.

If the condition is received in a laboratory course, the student must make up the work in which he is deficient before the time of the condition examinations, or receive a failure.

A failure in a subject means that the student must repeat the subject in class the next time it is given.

Students, who, on account of ill-health or other causes, are not able to carry 22 credits a semester, will be allowed to carry a lighter course, which will enable them to graduate in five years.

REQUIRED COURSES.

FRESHMAN YEAR OF ALL FOUR YEAR COURSES.

First Semester.

	Hours Attendance Rec.	Lab.	Credits.
College Algebra, Eng. Math. (1)	3		3
Trigonometry, Eng. Math. (2)	2		2
Chemistry, Chem. (1)	3	4	5
Mechanical Drawing, M. E. (1)		6	3
French, German or Spanish, M. Lang. (1), (3) or (5)	4		4
English, Eng. (1)	4		4
Review of Engineering Industries, M. E. (9)	1		1

Second Semester.

Analytic Geometry, Eng. Math. (3)	5		5
Chemistry, Chem. (2)	3	4	5
Descriptive Geometry, M. E. (2)	1	5	3
English, Eng. (2)	4		4
French, German or Spanish, M. Lang. (2), (4) or (6)	4		4
Review of Engineering Industries, M. E. (9a)	1		1

ARCHITECTURAL ENGINEERING.

SOPHOMORE YEAR.

First Semester.

	Hours Attendance Rec.	Lab.	Credits.
Calculus, Eng. Math. (4)	4		4
Technical Mechanics, C. E. (7)	4		4
Physics, Physics (1)	3	4	5
English, Eng. (3)	3		3
Construction, Arch. (10)	2		2
Descriptive Geometry, Arch. (1)		4	2
Design, Arch. (2)		4	2

Second Semester.

	Hours Attendance Rec.	Lab.	Credits.
Calculus, Eng. Math. (5)	4		4
Technical Mechanics, C. E. (8)	4		4
Physics, Phy. (2)	3	4	5
English, Eng. (4)	3		3
Construction, Arch. (11)	2		2
Design, Arch. (3)		4	2
Free Hand Drawing, Arch. (7)		4	2

JUNIOR YEAR.

First Semester.

Mechanics of Materials, C. E. (9) and (11)	3	4	5
Masonry, C. E. (20)	5		5
Graphic Statics, C. E. (18)	2	2	3
Structural Design, C. E. (14)		2	1
Architectural Design, Arch. (4)		8	4
Philosophy, Phil. (1)	4		4

Second Semester.

Graphic Statics, C. E. (19)	2	2	3
Structural Design, C. E. (15)		4	2
Pictorial Drawing, Arch. (24)	1	4	3
Architectural Design, Arch. (5)		8	4
Philosophy, Phil. (2)	5		5
Elective			3
Fireproofing, Arch. (13)	2		2

SENIOR YEAR.

First Semester.

Trusses, C. E. (22)	4		4
Concrete, C. E. (27)	2	2	3
History of Architecture, Arch. (8)	2		2
Heating and Ventilation, M. E. (25)	2		2
Sanitation, Arch. (12)	2		2

	Hours Attendance Rec.	Lab.	Credits.
Interior Decoration, Arch. (14)	2		2
Design, Arch. (6)		8	4
Philosophy, Phil. (3)	3		3

Second Semester.

History of Architecture, Arch. (9)	2		2
Political Economy. Pol. Econ. (1)	1		1
Business Law, Law (1)	1		1
Contracts and Specifications, C. E. (31)	2		2
Thesis, Arch. Thesis			6
Philosophy, Phil. (4)	4		4
Elective			6

CIVIL ENGINEERING.

SOPHOMORE YEAR.

First Semester.

	Hours Attendance Rec.	Lab.	Credits.
Calculus, Eng. Math. (4)	5		5
Technical Mechanics, C. E. (7)	3		3
Physics, Physics (1)	3	4	5
Geology, Geol. (1)	2		2
Surveying, C. E. (1)	1	2	2
Drawing, C. E. (12)		4	2
English, Eng. (3)	3		3

Second Semester.

Calculus, Eng. Math. (5)	5		5
Technical Mechanics, C. E. (8)	3		3
Physics, Phy. (2)	3	4	5
Mineralogy, Geol. (2)	3		3
Surveying, C. E. (2)	1	2	2
English, Eng. (3)	3		3
Drawing, C. E. (13)		2	1

JUNIOR YEAR.

First Semester.

	Hours Attendance Rec.	Lab.	Credits.
Mechanics of Materials, C. E. (9)	5		5
Masonry, C. E. (20)	3		3
Graphics, C. E. (18)	2	2	3
Differential Equations, Eng. Math. (6)	2		2
Field Engineering, C. E. (3)	1	4	3
Structural Design, C. E. (14)		4	2
Materials Testing Laboratory, C. E. (10)		2	1
Philosophy, Phil. (1)	3		3

Second Semester.

Hydraulics, C. E. (21)	4	2	5
Electricity, E. E. (14)	2	2	3
Graphics, C. E. (19)	2	2	3
Masonry, C. E. (20a)	2		2
Field Engineering, C. E. (4)	1	4	3
Structural Design, C. E. (15)		6	3
Philosophy, Phil. (2)	3		3

SENIOR YEAR.

First Semester.

Roofs, Bridges and Other Trusses, C. E. (22)	5		5
Roads and Pavements, C. E. (24)	2	2	3
Sewers and Sanitation, C. E. (25)	2		2
Concrete and Reinforced Concrete, C. E. (27)	3		3
Design, C. E. (16)	2	8	6
Philosophy, Phil. (3)	3		3

Second Semester.

Roofs, Bridges and Other Trusses, C. E. (23)	4		4
Political Economy, Pol. Econ. (1)	1		1

	Hours Attendance Rec.	Lab.	Credits.
Business Law, Law (1)	1		1
Sewers and Sanitation, C. E. (25)	3		3
Railway Construction, C. E. (30)	2		2
Estimates and Specifications, C. E. (31)	2		2
Design, C. E. (16a)		4	2
Thesis, C. E. (17)			4
Philosophy, Phil. (4)	3		3

ELECTRICAL AND MECHANICAL ENGINEERING.

SOPHOMORE YEAR.

First Semester.

	Hours Attendance Rec.	Lab.	Credits.
Calculus, Eng. Math. (4)	5		5
Technical Mechanics, C. E. (7)	3		3
Physics, Physics (1)	3	4	5
Kinematics, M. E. (3)	2		2
English, Eng. (3)	3		3
M. E. Laboratory, M. E. (15)		4	2
Shopwork, M. E. (10)		4	2

Second Semester.

Calculus, Eng. Math. (5)	5		5
Technical Mechanics, C. E. (8)	3		3
Physics, Physics (2)	3	4	5
Drawing, M. E. (4)	1	4	3
English, Eng. (4)	3		3
Shopwork, M. E. (11)		6	3

JUNIOR YEAR.

First Semester.

Mechanics of Materials, C. E. (9)	5		5
Machine Design, M. E. (5)		4	2
Boilers, M. E. (18)	2		2

	Hours Attendance Rec.	Lab.	Credits.
Electrical Measurements, Physics (3)		2	1
Electrical Machinery, E. E. (1)	3		3
Differential Equations, Eng. Math. (6)	2		2
E. E. Laboratory, E. E. (9)		2	1
Materials Testing Laboratory, C. E. (11)		2	1
Shopwork, M. E. (12)		4	2
Philosophy, Phil. (1)	3		3

Second Semester.

Hydraulics, C. E. (21)	4	2	5
A. C. Machinery, E. E. (2)	3		3
Steam and Gas Machinery, M. E. (19)	4		4
E. E. Laboratory, E. E. (10)		2	1
Machine Design, M. E. (6)	1	4	2
M. E. Laboratory, M. E. (16)		2	1
Shopwork, M. E. (13)		4	2
Surveying, C. E. (32)		2	1
Philosophy, Phil. (2)	3		3

ELECTRICAL ENGINEERING.

SENIOR YEAR.

First Semester.

	Hours Attendance Rec.	Lab.	Credits.
Thermodynamics, M. E. (20)	4		4
Industrial Engineering, M. E. (23)	2		2
Electrical Design, E. E. (6)		4	2
Concrete, C. E. (27)	3		3
Alternating Currents, E. E. (3)	3		3
E. E. Laboratory, E. E. (11)		4	2
Graphics, C. E. (18)	2	2	3
Philosophy, Phil. (3)	3		3

Second Semester.

	Hours Attendance Rec.	Lab.	Credits.
Power Plant Design, E. E. (7)	1	2	2
Alternating Currents, E. E. (4)	3		3
Electrical Design, E. E. (8)		4	2
E. E. Laboratory, E. E. (12)		2	1
Hydraulic Motors, M. E. (22)	2		2
Business Law, Law (1)	1		1
Estimates and Specifications, C. E. (31)	2		2
Political Economy, Pol. Econ. (1)	1		1
Technical Literature, E. E. (13)	1		1
Thesis, E. E. Thesis			4
Philosophy, Phil. (4)	3		3

MECHANICAL ENGINEERING.

SENIOR YEAR.

First Semester.

	Hours Attendance Rec.	Lab.	Credits.
Thermodynamics, M. E. (20)	4		4
Industrial Engineering, M. E. (23)	2		2
Alternating Currents, E. E. (3)	3		3
Machine Design, M. E. (7)		4	2
Concrete, C. E. (27)	3		3
Graphics, C. E. (18)	2	2	3
M. E. Laboratory, M. E. (17)		4	2
Philosophy, Phil. (3)	3		3

Second Semester.

Technical Literature, M. E. (27)	1		1
Power Plant Design, M. E. (8)	1	2	2
Alternating Currents, E. E. (4)	3		3
Hydraulic Motors, M. E. (22)	2		2
Estimates and Specifications, C. E. (31)	2		2

	Hours Attendance Rec.	Lab.	Credits.
Political Economy, Pol. Econ. (1)	1		1
Thesis, M. E. Thesis			4
Business Law, Law (1)	1		1
Elective			2
Philosophy, Phil. (4)	3		3

OUTLINE OF COURSES.

ARCHITECTURE.

(1) DESCRIPTIVE GEOMETRY.

Two Credits. **Four Hours Drawing.**
First Semester.

Problems in point, line, plane, curved surfaces and double curved surfaces of revolution. Intersection of planes and solids. Development of solids. Plane surface solids. Intersection of solids. Perspective. Shade and shadows. Isometric projections. Applications. Prerequisite, M. E. (2).

(2) DESIGN.

Two Credits. **Four Hours Drawing.**
First Semester.

The student is taught to draw with neatness and precision the various Orders. Free scope is given him to bring into play his designing ability. This course is a preparation for general architectural composition and aims to bring out and direct along proper channels whatever ability in designing the student may have. At first simple problems are given, but as the student's ability increases he is given more difficult ones.

(3) DESIGN.
Two Credits. **Four Hours Drawing.**
Second Semester.

Continuation of (2). Prerequisite, Arch (2).

(4) DESIGN.
Four Credits. **Eight Hours Drawing.**
First Semester.

Continuation of (3). Prerequisite, Arch (3).

(5) DESIGN.
Four Credits. **Eight Hours Drawing.**
Second Semester.

Continuation of (4). Prerequisite, Arch. (4).

(6) DESIGN.
Four Credits. **Eight Hours Drawing.**
First Semester.

Continuation of (5). Prerequisite, Arch. (5).

(7) FREEHAND DRAWING.
Two Credits. **Four Hours Drawing.**
Second Semester.

Drawings are made from casts and afterwards from life. In all drawings precision and neatness in freehand work is demanded.

(8) HISTORY OF ARCHITECTURE.
Two Credits. **Two Hours.**
First Semester.

Fully illustrated lectures and recitations are given on the Architectural history of different periods. The outlines of general history are studied in conjunction with the architecture of the times in order to enable the student to appreciate the relation of the people and their architecture. A careful study is made of the various examples of the great architectural styles and also of painting and sculpture.

(9) HISTORY OF ARCHITECTURE.

Two Credits. **Two Hours.**
Second Semester.

Continuation of (8). Prerequisite, Arch. (8).

(10) CONSTRUCTION.

Two Credits. **Two Hours.**
First Semester.

A course intended to give the student the fundamental notions. Foundations are studied and their adaptability to various soils. Manufacture of lime and cement; bricks and their manufacture; stone quarrying and dressing.

(11) CONSTRUCTION.

Two Credits. **Two Hours.**
Second Semester.

After the course in general construction, constructions in frame of wood, stone and brick are carefully studied.

(12) SANITATION.

Two Credits. **Two Hours.**
First Semester.

The draining and sewage of buildings, traps and systems of trapping, plumbing, fixtures, sewage removal and disposal, improved methods of house drainage and sanitary plumbing. Tests.

(13) FIREPROOFING.

Two Credits. **Two Hours.**
Second Semester.

A study of the different varieties of fire-proofing material and the methods of fire-proof building.

(14) INTERIOR DECORATION.

Two Credits. **Two Hours**
First Semester.

Students are taught the designing of fire-places, stairways,

halls, ceilings, wainscoting and the like, and also such ornamental designs for interior or exterior work as will bring into practice what he has learned of the various styles of architecture and their combinations. Plans are made of these in various scales.

CHEMISTRY.

(1) GENERAL AND INORGANIC CHEMISTRY.

Three Hours Lecture, Four Hours Laboratory.
Five Credits. First Semester.

Discussion of Fundamental Laws, Mathematics of Chemistry. Ordinary elements studied from the standpoint of the Periodic Law. Practical demonstration of Laws and Theories. McPherson & Henderson College Chemistry.

(2) GENERAL AND INORGANIC CHEMISTRY.

Three Hours Lecture, Four Hours Laboratory.
Five Credits. Second Semester.

Ordinary and rarer elements from the standpoint of the Periodic Law. Metallurgy, with particular adaptation to the needs of Engineering students. Practical demonstration of principles discussed. Manufacture of Iron, Steel, Cement, Gas, Lubricants, Distillates, Pigments and Alloys. Prerequisite Chem. (1). McPherson & Henderson's College Chemistry.

CIVIL ENGINEERING.

(1) SURVEYING.

One Hour Lecture, Two Hours Laboratory.
Two Credits. First Semester.

Theory, construction, use and adjustments of tape, compass, level and transit. Land and city surveying. Plotting, field work and computation of areas. Division of land. Simple leveling. Complete maps. Practical field work covering all matter taught in class work. The object is to familiarize

thoroughly the student with the instruments and with field conditions. Field notes. Field maps. Topographical sketching without instruments. Prerequisite, Eng. Math. (2). Breed & Hosmer's Principles & Practice of Surveying. Pence and Ketchum, Surveying Manual.

(2) SURVEYING.

One Hour Lecture, Two Hours Laboratory.
Two Credits. **Second Semester.**

Continuation of (1). Prerequisite C. E. (1). Breed & Hosmer's Principles & Practice of Surveying.

(3) FIELD ENGINEERING.

One Hour Lecture, Four Hours Laboratory.
Three Credits. **First Semester.**

Leveling, contour lines, hachures, cross-section work. Use of plane table. Maps of work. Stadia. Transit stadia. City, mine, hydrographic and topographic surveying. Engineering office work. Plotting profiles and cross-sections. Calculations of areas. Computation of volumes of earth work and masonry. Draughting field notes. Excavation methods in different materials. Estimate of cost. Overhaul. Application to canals, trenches, embankments, dredging, etc. Practical surveying in the field under all the heads in the scope of the work in class. Notes. Calculations. Conditions are made as nearly those of a corps in the field as possible, each student being required to fill every position in turn. Breed & Hosmer's Principles & Practice of Surveying.

(4) FIELD ENGINEERING.

One Hour Lecture, Four Hours Laboratory.
Three Credits. **Second Semester.**

Continuation of (3). Prerequisite C. E. (3). Breed & Hosmer's Principles and Practice of Surveying.

(5) ENGINEERING IN FIELD.

Three Credits. **Six Hours Laboratory.**
First Semester.

Reconnaissance. Location, preliminary survey and grade stakes for highways, canals and railways. Plots and calculations from notes. Theory of railway curves; simple, compound and taper curves. Locating side-tracks, switches, yards. Cross sectioning. Triangulation. The work is made as nearly practical as possible and covers the theories and principles taught in class work. Prerequisites C. E. (4). Breed & Hosmer's Principles & Practice of Surveying. Allen's Railroad Curves and Earthwork.

(6) ENGINEERING IN FIELD.

Two Credits. **Four Hours Laboratory.**
Second Semester.

Continuation of (5). Prerequisite C. E. (5). Text as in (5).

(7) TECHNICAL MECHANICS.

Three Credits. **Three Hours.**
First Semester.

General theories and principles concerning matter, inertia, space and time, motion, velocity and acceleration. Momentum. Force. Measures. Comparison and representation of force. Statics: Composition and resolution of concurring forces. Conditions of equilibrium. Composition and resolution of forces acting on a rigid body. Center of gravity. Friction. Virtual velocities. Machines. Funicular polygon. Attractions. Rectilinear and curvilinear motion. Kinetics: laws of motion. Motion under the action of a variable force, and in a resisting medium. Central forces. Constrained motion. Impact. Work and energy. Moments of inertia. Rotary motion. Motion of a system of rigid bodies in space.

Effort is made throughout the course to direct the attention of the student to practical application of mathematical deductions. Prerequisites Eng. Math. (3). This course must accompany Physics (1). Poorman's Applied Mechanics.

(8) TECHNICAL MECHANICS.

Three Credits. **Three Hours.**
Second Semester.

Continuation of (7). Prerequisite C. E. (7). Text as in (7).

(9) MECHANICS OF MATERIALS.

Five Credits. **Five Hours.**
First Semester.

Resistance and elasticity of materials. Pipes, cylinders and riveted joints. Simple and cantilever beams. Restrained and continuous beams. Columns, shafts and girders and their design. Torsion in shafts. Combined stresses. Strength and resilience of materials. Tension and compression. Flexure of beams. Shear and torsion. Apparent and true stresses. Plates, spheres and columns. Analytical and graphical methods used in the solution of problems. Prerequisites Eng. Math. (5) and C. E. (8). Merriman's Mechanics of Materials.

(10) MATERIALS TESTING LABORATORY.

One Credit. **Two Hours Laboratory.**
First Semester.

Tests of iron, steel, wood and concrete in tension, compression, shear, bending and torsion. Rattler tests on brick, and standard tests on road materials.

Prerequisite—must be taking C. E. (9). Text Hatt & Scofield's Laboratory Manual of Testing Materials.

(11) MATERIALS TESTING LABORATORY.

Two Credits. **Four Hours Laboratory.**
First Semester.

Same as C. E. (10) only more complete. Especially for students in Architectural Engineering, Electrical Engineering and Mechanical Engineering. Prerequisite—must be taking C. E. (9). Text as in (10).

(12) DRAWING.

Two Credits. **Four Hours Drawing.**
First Semester.

Shading by lines and colors. Topographical drawing and

lettering. Conventional signs, etc. Maps of work done in field. Completed maps in pencil; pen and colors. Blue prints. Tracing structural details. Prerequisite M. E. (1). Daniel's Topographical Drawing.

(13) DRAWING.

Two Credits. **Four Hours Drawing.**
Second Semester.

Continuation of (12). Prerequisite C. E. (12). Text as in (12).

(14) STRUCTURAL DESIGN.

Two Credits. **Four Hours Drawing.**
First Semester.

The Design and Detailing of a Reinforced Concrete Retaining Wall, Culvert, Pier and Abutment, a Steel Roof Truss, a Timber Roof Truss. Full computations of stresses must be submitted together with finished drawings and estimate of quantities. Definite conditions are given from which the design must be evolved by the student. Prerequisite—must be taking C. E. (10). Ketchum's Structural Engineers' Handbook. Bishop's Structural Drafting. Dewell's Timber Framing.

(15) STRUCTURAL DESIGN.

Three Credits. **Six Hours Drawing.**
Second Semester.

Continuation of (14). Prerequisite C. E. (14). Baker, and Current Publications of New Structures.

(16) DESIGN.

Six Credits. **Two Hours, Lecture. Eight Hours Drawing.**
First Semester.

The Design and Detailing of a Railway Plate Girder, a Steel Truss Bridge, a Reinforced Concrete Girder, and a Reinforced Concrete Arch Bridge. The actual site of each structure is assigned in each problem. Prerequisite—must

be taking C. E. (27). Merriman and Jacoby's Roofs and Bridges Vol. (3). Hool's Reinforced Concrete Construction Vol. (3).

(17) THESIS.

Four Credits. **Eight Hours.**
Second Semester.

Original investigation of some Engineering problem.

(18) GRAPHICS.

Two Hours Lecture, Two Hours Laboratory.
Three Credits. **First Semester.**

Principles and methods. Application to roof trusses under dead, snow and wind loads. Complete stresses for triangular and crescent trusses. Unsymmetrical loads and trusses. Bridge trusses. Stresses due to dead, snow, wind, initial tension and live loads. Bowstring trusses, Stress loads, Locomotive wheel loads. Plate girders. Shears. Moments. Trusses with broken chords. Miscellaneous trusses. Elastic deformation of trusses. Application to other engineering structures. Merriman and Jacoby's Graphic Statics.

(19) GRAPHICS.

Two Hours Lecture, Two Hours Laboratory.
Three Credits. **Second Semester.**

Continuation of (18). Prerequisite C. E. (18). Text as in (18).

(20) MASONRY.

Five Credits. **Five Hours.**
First Semester.

The Non-Metallic Materials: their strength, durability, occurrence, testing and uses. Plain Concrete: selection of aggregates, proportioning, mixing and placing for maximum strength and density. Forms. Reinforced Concrete: general principles and assumptions involved in the theory, development and application of formulae for rectangular and T beams, simple and continuous, for bending, diagonal tension,

bond, etc.; plain, spiral and hooped columns. Stone and Brick Masonry. Waterproofing. Foundations on Land: bearing capacity and methods of improving it, safe loads, design and arrangement of footings, piles and pile driving, safe loads on piles. Foundations under Water: coffer dam, crib, open caisson, pneumatic, and freezing processes, dredging through wells, pumping, the effect of compressed air. Masonry Walls and Dams: lateral pressure of water and earth, stability, internal stresses, investigation, design, construction details. Bridge Abutments and Piers. Culverts. The Voussier Arch: general data, methods of failure, stability, static analysis. Baker's Treatise on Masonry Construction. Hool's Reinforced Concrete Construction. Vol. I.

(21) HYDRAULICS.

Four Hours Lecture, Two Hours Laboratory.
Five Credits. **Second Semester.**

Fundamental data. Hydrostatics. Theoretical hydraulics. Instruments and observations, especially meters and pressure gauges. Flow through orifices. Flow over weirs. Flow through tubes and pipes. Flow in conduits. Flow in rivers. Water supply and water power. Dynamic pressure of water. Water wheels. Overshot, breast, undershot, vertical impulse, horizontal impulse and downward flow impulse wheels. Special forms of wheels. Turbines. Classification. Theory and design of turbines. Downward-flow and impulse turbines. Special devices. Naval hydro-mechanics. Pumps and pumping. Force and centrifugal pumps. Pumping engines. Other kinds of pumps. Pumping through pipes, and through hose. Hydraulic motors. Hydraulic-electric analogies. Stress is laid upon the effect of hydraulic laws upon engineering construction or under water, especially in problems involving the impounding of water, or oil. Daugherty's Hydraulics.

(22) STRESSES IN STRUCTURES.

Four Credits. **Four Hours.**
First Semester.

Analysis and deduction of stresses in members of roof trusses. Different types of loads. Final stresses in roof trusses. The evolution of present types of highway and railway bridge trusses. Stresses due to dead, live and wind loads, impact and traction on all members of simple bridges. Text: Merriman & Jacoby's Roofs & Bridges. Vol. I.

(23) STRESSES IN STRUCTURES.

Four Credits. **Four Hours.**
Second Semester.

Elementary Indeterminate forms. The properties of continuous beams and rigid frames derived from, (a) the double integration of the differential equation of the elastic line; (b) the equations derived from the laws of work, and (c) the principle of area moments. Deflections in structures with open webs. Stresses in redundant members. Arches with solid and open webs. Movable bridges. Prerequisite C. E. 22. Text: Hudson's Deflections and Statically Indeterminate Stresses.

(24) ROADS AND PAVEMENTS.

Three Credits: Two Hours Lecture, Two Hours Laboratory.
First Semester.

Different types of highways. Economic location of highways. Traction resistance. Gradients. Foundations. Preparing foundations. Drainage. Standard cross-sections. Natural, broken stone and other artificial roads. Materials and their adaptability to classes of traffic. Road coverings. Asphalts. Asphaltenes and patented road coverings. Concrete. Oils. Oiled roads. Dust prevention. Maintenance and repairs. Pavements. Paving materials. City streets. Width and cross-section, crown, gutters, curbs, footwalks and crossings. Street intersection and grades. Standard city streets and street railway construction. Repairs. Lectures on improvement and changes in highway construction. Agg's Roads

and Pavements; Bulletins from Office of Public Roads, U. S. Dept. of Agriculture.

(25) SEWERS AND SANITATION.

Three Credits. **Three Hours.**
First Semester.

Rainfall and run-off. Estimating future population, Amount of sewage per capita, Ground water. Grades and Velocities, Sewerage systems, Cross-sections, Flushing. The meaning of chemical analyses of water and sewage. Bacteria and their relation to sewage disposal and water purification. Texts: Ogden's Sewer Design; Fuller's Sewage Disposal.

(26) GEODESY AND ASTRONOMY.

One Credit. **Two Hours Laboratory.**
First Semester.

Class, field and observatory work. Methods of field work to obtain accurate results. Construction, use and correction of errors in instruments. Observatory determination of latitude, longitude, azimuth and time. Field work in determining parallels and meridians. Latitude and azimuth. Transit, altazimuth and sextant, and their use. Solar transit. Triangulations and adjustments. Compass variations. Especial attention is directed to the use and correction of engineering instruments and their adaptability to astronomical uses. Crandall's Text-Book on Geodesy and Least Squares.

(27) REINFORCED CONCRETE.

Three Credits. **Three Hours.**
First Semester.

The Chemistry and Testing of Cements and Aggregates. A short review of: Voids and Other Characteristics of Aggregates; Laying Concrete and Mortar in Freezing Weather; The effect of Sea water and other Destructive Agencies; Water tightness and Strength of Concrete. Advanced Theory and formulae for:—Members under flexure and direct stress; Hollow and Wedge shaped beams; Flat slabs; Rigid frames; Temperature, shrinkage, and settlement stresses. A critical

and comprehensive review of the principal test made on reinforced concrete and reinforced concrete structures intended to develop the student's judgment and lead to a clear understanding of modern design specifications. Specifications for the Design of Reinforced Concrete. Building Codes. Building Construction. Beam and Girder Bridges. The Elastic Arch. Taylor & Thompson's Concrete, Plain & Reinforced. Hool's Reinforced Concrete Design, Vol. III.

(28) TUNNELING.

Two Credits. **Two Hours.**
First Semester.

Classification of tunnels. Locating tunnels. Economic location. Different methods employed in tunnels under various soil conditions. Excavating. Removal of excavations. Blasting. Powders. Drills and machinery used. Economic distribution of forces. Heading and bench. Linings in wood, brick, concrete and reinforced concrete. Drainage. Ventilation. Rapid transit system. City subway work and methods. Stauffer: Modern Tunnel Practice.

(29) IRRIGATION AND WATER SUPPLY.

Three Credits. **Three Hours.**
First Semester.

Irrigation in general. Value, cost and returns. Drainage areas. Estimation of rainfall and discharge from drainage areas. Water units and duty. Streams, flow and discharge. Measuring devices. Canals and ditches; construction, alignment, slope and cross-section. Distribution. Application of water in irrigation. Storage work. Water supply and losses. Geological conditions affecting reservoir sites. Earth and masonry dams. Details of headworks, diversion, weirs, waste ways, sluices and regulators. Pumping machinery. Maintenance. Water rights. Irrigation laws. Newell and Murphy's Principles of Irrigation Engineering.

Drinking water and disease. Artificial methods of water purification. Natural purification. Properties of waters from Snow, Rivers, Lakes or reservoirs, Wells, etc. Per

capita consumption. Texts: Newell & Murphy's Principles of Irrigation Engineering; Mason's Water Supply.

(30) RAILWAY CONSTRUCTION.

Three Credits. **Three Hours.**
Second Semester.

Much of the course is also adapted to the construction of canals, highways, levees, etc. Reconnaissance. Location. Alignment, grade and distances. Parties. Staking out work. Grading. Organization of grading parties. Methods of grading. Machines, etc. Output of men, animals and machines. Volumes. Cut and fill. Overhaul. Finishing. Revetments. Drainage, areas and waterways. Culverts, size and character. Tracklaying. Tracklaying machines. Surfacing. Ballast. Single and double track roads. Side tracks, switches, crossings and yards. Round houses. Shortening lines. Operating expenses. Maintenance. General land extra gangs. Camp hygiene. Right of way. This course is largely lecture work, using standard text-books and writings. Raymond's Railway Engineering.

(31) ESTIMATES AND SPECIFICATIONS.

Two Credits. **Two Hours.**
Second Semester.

Principally a lecture course, but supplemented by practical problems for which estimates and specifications must be submitted. Position of engineer in construction. Duties. Estimates. Corrections. Latitude allowed. Contracts. General kinds. Special. Specifications. Definiteness. Lectures on law of contracts. Kirby's Elements of Specification Writing

(32) SURVEYING.

One Credit. **Two Hours Laboratory.**
Second Semester.

Use and adjustment of tape, level and transit. For Electrical and Mechanical Engineers. Pence & Ketchum's Surveying Manual.

ELECTRICAL ENGINEERING.

(1) ELECTRICAL MACHINERY.

Three Credits. **Three Hours.**
First Semester.

Magnetic field. Magneto-motive force. Hysteresis. Elementary dynamo. The magnetic circuit. Armature core. Commutator. Brush shifting. Sparking at brushes and remedies. Different types of generators. Methods of transmitting, distributing and controlling direct current. Direct current series and parallel systems. Feeders and mains. High tension D. C. systems. Timbie's Elements of Electricity.

(2) ALTERNATING CURRENTS.

Three Credits. **Three Hours.**
Second Semester.

Self and mutual inductance. Capacity. Impedance. Phase angle and power factor. Series and repulsion types. Synchronous motors. Induction motors, single and polyphase. Methods of starting. Speed control. Electric drive for cranes, elevators, presses, pumps, fans, mill-work, etc. Prerequisite, Physics (3) and E. E. (1). Timbie and Higbie's Alternating Current Electricity. First Course.

(3) ALTERNATING CURRENT MACHINERY.

Three Credits. **Three Hours Drawing.**
First Semester.

Electric power systems. Translating, controlling and transmitting equipment. Constant potential and constant current transformers. Efficiency, regulation and protection. Polyphase systems of generation. Two phase and three phase and conversion from one system to another. Calculation of alternating current transmission lines. Regulation of voltage. Power factor of systems. Switch-boards. Apparatus used on Switch-boards. Location. Types. Pole lines. Cable and conduit systems. Prerequisites, E. E. (2). Timbie and Higbie's Alternating Current Electricity. First Course.

(4) ALTERNATING CURRENT MACHINERY.

Three Credits. **Three Hours.**
Second Semester.

Continuation of (3). Timbie and Higbie's Alternating Current Electricity. Second Course.

(5) TELEPHONY.

One Credit. **One Hour.**
First Semester.

The magneto-telephone. The microphone. Carbon transmitters. Induction coils. Call methods. Series and parallel circuits. Subscribers' equipment. Line disturbances. Common battery systems. Exchange equipment. Party lines. Automatic systems. Combined telegraphy and telephony. Wireless telegraphy. Generation of electrical waves. Transmitting and receiving apparatus. Prerequisites Physics (2) and E. E. (1). Electrical Engineer's Handbook.

(6) DESIGN OF DIRECT CURRENT MACHINERY.

Two Credits. **Four Hours Drawing.**
First Semester.

Electrical and mechanical theory applied to the design of D. C. machinery. Switches, heaters, controllers, etc. Complete calculations and working drawings for a dynamo or motor, to fulfill given specifications. Prerequisite E. E. (1). Still's Electric Machinery Design.

(7) POWER PLANT DESIGN.

Four Credits. **Two Hours Lecture.** **Four Hours Drawing.**
Second Semester.

Design of a complete plant to furnish light and power for a city of a given size. Consideration of the elements: illumination, charges, operating expenses, income, organization and administration, reports, specifications, contracts and statistics. Prerequisites, E. E. (3) and (6). Weingreen's Electric Power Plant Engineering.

(8) ELECTRICAL DESIGN.

Two Credits. **Four Hours Drawing.**
Second Semester.

Design of alternators, transformers, induction motors and other alternating current apparatus. Thorough investigation and complete design of some unit assigned. Still's Electric Machinery Design.

(9) ELECTRICAL ENGINEERING LABORATORY.

Two Credits. **Four Hours Laboratory.**
First Semester.

Determination of the resistance of electric circuits. Relation between speed, field strength and voltage. Operation of shunt series and compound-wound generators. Distribution of potential around commutator. Heat runs to determine load capacity. Stray power. Starting boxes. Counter electro-motive force. Shunt, series, compound and differentially wound motors. Operation of shunt and compound wound generators in parallel. Distribution of load. Control of series circuits. Regulation of arc lamps. Constant potential and constant current generators. Prerequisite, must be taking E. E. (1).: Wilson's Dynamo Laboratory Outlines and References.

(10) ELECTRICAL ENGINEERING LABORATORY.

Two Credits. **Four Hours Laboratory.**
Second Semester

Calibration of ammeters and voltmeters. Calibrations and adjustments of A. C. and D. C. watt-hour meters. Determination of resistances. Measurement of inductance and capacity. Permeability of samples of iron and steel. Determination of hysteresis. Storage Batteries. Testing. Candle-power of lamps from standard candle. Cable testing. Insulation resistance. Practice in operation of A. C. motors, generators and other apparatus. Prerequisite, E. E. (9).

(11) ELECTRICAL ENGINEERING LABORATORY.

Two Credits. **Four Hours Laboratory.**
First Semester.

Alternating current circuits. Inductance, capacity, impedance, phase, relation, true and apparent watts and power factor. Alternators. Magnetization curves. Losses and synchronous impedance. Synchronous motors. Methods of Synchronizing. Methods of starting rotary converters. Compounding. Calculation of efficiency. Alternators in parallel. Transformers. Regulation. Heating and Efficiency. Use as induction regulators and phase changers. Wave shapes by instantaneous contact and by the oscillograph. Resonance. Methods of starting induction motors. Efficiency by brake tests. Operation of induction generator. Reports of complete tests on plants.

(12) ELECTRICAL ENGINEERING LABORATORY.

One Credit. **Two Hours Laboratory.**
Second Semester.

Continuation of (11). Prerequisite, E. E. (11).

(13) TECHNICAL LITERATURE.

One Credit. **One Hour.**
Second Semester.

Assigned readings and reports from current technical literature.

(14) ELECTRICITY.

Three Credits. **Two Hours Lecture, Two Hours Laboratory.**
Second Semester.

A short course similar to E. E. (1) and E. E. (9) for Civil Engineering Students. Gray's Electrical Engineering.

ENGINEERING MATHEMATICS.

(1) ALGEBRA.

Three Credits. **Three Hours.**
First Semester.

Complete Algebra to include quadratic equations; then more particularly; ratio and proportion, progressions, imaginary and complex numbers, indeterminate equations, binomial theorem, variables and limits, inequalities, interpretation of results, logarithms, permutations and combinations, undetermined coefficients, determinants and graphic algebra. Brenke's Advanced Algebra and Trigonometry.

(2) TRIGONOMETRY.

Two Credits. **Two Hours.**
First Semester.

Development of general formulae. Functions and their relations. Logarithms and their uses. Properties of triangles. Application of principles to practical problems in right and oblique triangles. Navigation in plane trigonometrical problems. Spherical trigonometry. Application to problems in astronomy and spheric mensuration. Brenke's Advanced Algebra and Trigonometry.

(3) ANALYTIC GEOMETRY.

Five Credits. **Five Hours.**
Second Semester.

Loci. Lines. Circle. Different systems of co-ordinates. Conic sections. Supplementary proportions. Loci of second order. Plane curves of higher order. Solid analytical geometry, especially of revolution. General equations. Prerequisites, Eng. Math. (1) and (2). Riggs' Analytic Geometry.

(4) CALCULUS.

Five Credits. **Five Hours.**
First Semester.

Fundamental formulae and principles for differential and

integral calculus. Maxima and minima. Curvature. Surfaces. Volumes. Intermediate forms. Envelopes. Series. Expansion. Forms of integration. Practical application. Prerequisite, Eng. Math. (3). Townsend's and Goodenough's Calculus.

(5) CALCULUS.

Five Credits. **Five Hours.**
Second Semester.

Continuation of (4). Prerequisite, Eng. Math. (4).

(6) DIFFERENTIAL EQUATIONS.

Two Credits. **Five Hours.**
Second Semester.

Analysis and deduction of formulae and equations used in physics, mechanics and engineering problems. Applications of formulae and equations given in engineering handbooks to problems. Practical problems and lectures. Prerequisite, Eng. Math. (5). Campbell's Differential Equations.

(7) METHOD OF LEAST SQUARES.

Two Credits. **Two Hours.**
Second Semester.

Study of the principles and methods. Applications to solution of physical, astronomical, engineering and other problems. The student will be made familiar with this higher and more accurate method of solution of problems in his profession, especially triangulations. Merriman's Method of Least Squares.

ENGLISH.

(1) COMPOSITION AND RHETORIC.

Four Credits. **Four Hours.**
First Semester.

Lectures and recitations. The invention, arrangement, and presentation of material. The different species of historical, philosophical, scientific, critical, etc., masterpieces.

(2) COMPOSITION AND RHETORIC.

Four Credits. **Four Hours.**
Second Semester.

Continuation of (1). Prerequisite, Eng. (1).

(3) RHETORIC AND LITERATURE.

Three Credits. **Three Hours.**
First Semester.

A course in English Rhetoric and Literature. Students who show any deficiency in English are required to take, in addition, the course in Special Composition. One hour a week is devoted to the study of Engineering Literature.

(4) RHETORIC AND LITERATURE.

Three Credits. **Three Hours.**
Second Semester.

Continuation of (3). Prerequisite, Eng. (3).

GEOLOGY.

(1) GEOLOGY.

Two Credits. **Two Hours.**
First Semester.

A course in dynamical, structural and historical Geology. Particular attention is paid to structural Geology and the influences of Constructive and Engineering conditions. The student is made familiar with different stones by illustrating each recitation with specimens of the particular rocks treated, as well as their adaptability in construction, method of occurrence, etc. Ries and Watson's Engineering Geology.

(2) MINERALOGY.

Three Credits. **Three Hours.**
Second Semester.

A course in Mineralogy with access to a large collection of specimens. Determination of unlabeled specimens. Crystallography. Blowpipe analysis. Includes a short course in

Metallurgy. Iron ores and production of iron and steel. Percentage and effects of sulphur, silicon, manganese and carbon in iron and steel. Coals, Coke, Carbons, and ash. Prerequisite, Geology (1). Text as in (1).

LAW.

(1) BUSINESS LAW.

One Credit. **One Hour.**
Second Semester.

A brief course in Contracts, Sales, Negotiable instruments, Real Estate, Partnership, Corporations and such other subjects as the professor may deem necessary or advisable. Allen's Business Law for Engineers.

MECHANICAL ENGINEERING.

(1) MECHANICAL DRAWING.

Three Credits. **Six Hours Drawing.**
First Semester.

Freehand lettering. Use of instruments. Plane problems. Freehand sketching. Orthographic, isometric and cabinet projections. Tracing and blue printing. French's Engineering Drawing.

(2) DESCRIPTIVE GEOMETRY.

Three Credits. **One Hour Lecture, Four Hours Drawing.**
Second Semester.

Orthographic projection of points, lines, planes, warped surfaces, etc., in the four angles of projection. Intersections. Tangents to curves and surfaces. Developments. Practical problems in stereotomy, surveying, architecture, belting, layouts, etc. Prerequisites, M. E. (1). Smith's Practical Descriptive Geometry.

(3) KINEMATICS.

Two Credits. **Two Hours.**
First Semester.

Motion, velocity and acceleration of machine parts. Rolling cylinders and cones. Lobed wheels. Belts. Levers, Cams, Linkwork. Gearing. Parallel and straight line motion. Intermittent linkwork. Aggregate combinations. Prerequisite, M. E. (1). Keown's Mechanism.

(4) MACHINE DRAWING.

Three Credits. **One Hour Lecture, Four Hours Drawing.**
Second Semester.

Language of Mechanical Drawing. Conventional method of representing bolts, screws and other standards. Piping. Designing and detailing simple parts to take tension, compression and sheer. Study of different methods of drawing and dimensioning found on commercial working drawings. Accuracy, completeness and speed are required. Prerequisite, M. E. (3. French's Engineering Drawing.

(5) MACHINE DESIGN.

Two Credits. **Four Hours Drawing.**
First Semester.

Selection of materials for machine parts. Proper working stress for different materials under dead, repeated and reversed loads. Determination of nature and distribution of stresses in each element of a machine. Friction. Design of such elements as crank shafts, machine frames, connecting rods, etc., when subject to tension, compression, shear, torsion, bending or any combination of these. Figuring weight and cost of manufacture. The kinematic layout of a machine for functional operation. The evolution of a design from preliminary sketch to complete working and assembly drawings, involving a study of strength, adaptability, symmetry, ease of operation, depreciation and cost of manufacture. In all this work the note-book is as important as the drawings. Prerequisite, M. E. (4). Benjamin and Hoffman's Machine Design.

(6) MACHINE DESIGN.

Three Credits. **One Hour Lecture, Four Hours Drawing.**
Second Semester.

Continuation of (5). Prerequisite, M. E. (5).

(7) MACHINE DESIGN.

Two Credits. **Four Hours Drawing.**
First Semester.

Continuation of (6). Prerequisite, M. E. (6).

(8) POWER PLANT DESIGN.

Two Credits. **Two Hours.**
Second Semester.

Sites. Comparison of high-speed engines. Corliss engines, steam turbines and gas engines. Cost and adaptability of different types of steam boilers. Condensers. Economizers. Superheaters. Pumps. Stokers. Piping. Complete layout of a plant with specifications and advertisements for bids. Fernald and Orrok's Power Plants.

(9) REVIEW OF ENGINEERING INDUSTRIES.

One Credit. **One Hour.**
First Semester.

Lectures and assigned reading on Engineering studies and work. This course is designed to teach the student how to study and to enable him to make a rational choice of a course of study.

(9a) REVIEW OF ENGINEERING INDUSTRIES.

One Credit. **One Hour.**
Second Semester.

Continuation of (9).

(10) SHOPWORK.

Two Credits. **Four Hours Laboratory.**
First Semester.

Woodworking. Proper use and care of bench tools. Exer-

cises in planing, squaring and simple joinery. Layout of all work from blue-prints.

Woodturning. Operation and care of turning lathe and tools. Exercises in woodturning and finishing.

(11) SHOPWORK.

Three Credits. **Six Hours Laboratory.**
Second Semester.

(a) Forging. Management of the forge fire. Exercises in Drawing, Upsetting, Shaping, Swaging and welding. Hardening and tempering. Forging characteristics of different grades of iron and steel. Harcourt's Forge Practice.

(b) Patternmaking. Operation and care of power woodworking machinery. Theory of patternmaking and moulding. Construction of simple wood patterns and core boxes. All work laid out from blue-prints.

(12) SHOPWORK.

Two Credits. **Four Hours Laboratory.**
First Semester.

Foundry practice. Floor and bench moulding. Casting of brass, bronze and alloys. Dry and green sand core work. Core making. Shop visits.

Prerequisite, M. E. (11). Tate & Stone's Foundry Practice.

(13) SHOPWORK.

Two Credits. **Four Hours Laboratory.**
Second Semester.

(a) Patternmaking. Continuation of M. E. (11).

(b) Advanced practice in all types of woodpatterns and core boxes. All layouts from working drawings.

(b) Machine shop practice. Operation and care of metal working machinery. Machining, drilling, chipping and filing. Calipering, guaging and fitting. Assembling and rigging Shop visits.

Prerequisite, M. E. (11) and (12).

(14) SHOPWORK.

Two Credits. **Four Hours Laboratory.**
First Semester.

(a) Machine shop practice. Continuation of (b) M. E. (13).

(b) Shop management. In this course the student is given certain tasks and shopwork assignments to carry out and oversee. The system involves Managing, Planning, Routing, Stock and Tool Room methods, Production and Time Records, and actual supervising and handling of lower classmen. Shop visits. Lectures.

Prerequisite, M. E. (13).

(15) MECHANICAL ENGINEERING LABORATORY.

Two Credits. **Four Hours Laboratory.**
First Semester.

Method of investigation. Classification of errors. Accuracy of numerical calculations. Autographic diagrams. Calibration of pressure gauges, thermometers, pyrometers, indicator springs, tachometers, planimeters, weirs, nozzles, orifices, pitot tubes, Venturi meters and dynamometers. Testing of lubricants. Density, viscosity, gumming, fire test and cold test. Measurement of power by the prony brake, Alden brake, traction dynamometers and transmission dynamometers. Belt testing. Measurement of flow of liquids and gases by means of meters, nozzles, pitot tubes, etc. Moisture in steam by barrel, Hoadley, Barrus, throttling, separating and chemical calorimeters. Heating value of coals determined by the bomb calorimeter. Heating value of gas by Junker's calorimeter. Flue gas analysis with Orsat's apparatus. Complete tests of steam engines, boilers, gas engines, injectors, pumps and entire plants. Standard reports. Carpenter and Diedrick's Experimental Engineering.

(16) MECHANICAL ENGINEERING LABORATORY.

One Credit. **Two Hours Laboratory.**
Second Semester.

Continuation of (15). Prerequisite (15.)

(17) MECHANICAL ENGINEERING LABORATORY.

Two Credits. **Four Hours Laboratory.**
First Semester.

Continuation of (16). Prerequisite, M. E. (16).

(18) BOILERS.

Two Credits. **Two Hours.**
First Semester.

Heat; conduction, convection and radiation. Heat of evaporation. Combustion. Smoke. Quantity of air required. Methods of firing. Classification of coals. Efficiency of combustion. Boiler horse-power. Types of Boilers. Furnaces. Stokers. Draft. Boiler Scale. Water purification. Explosions. Testing. Care of boilers. Prerequisite, Physics (1). Peabody's Steam Boilers.

(19) STEAM AND GAS MACHINERY.

Four Credits. **Four Hours.**
Second Semester.

Properties of steam. Slide-valve. Indicator. Simple and compound engines. High speed, Corliss and marine engines. Turbines. Steam pumps. Locomotives. Valve gears. Governors. Flywheels. Balancing. Steam engine performance. Operation of two and four cycle gas and oil Engines. Indicator analysis. Prerequisite, M. E. (18). Rippert's Steam Engines.

(20) THERMODYNAMICS.

Four Credits. **Four Hours.**
First Semester.

Mechanical theory of heat. First and second laws of thermodynamics. Perfect gases. Saturated vapors. Superheated vapors. Hot air engine. Internal combustion engine cycles. Influence of engine cylinder walls. Friction of engines. Refrigerating machines. Injectors. Steam turbines. Prerequisite, M. E. (19). Ennis' Applied Thermodynamics.

(21) INTERNAL COMBUSTION ENGINES AND AUTOMOBILES.

Two Credits. **Two Hours.**
First Semester.

The theory and design of gas, gasoline and oil engines, gas producer practice; the combustion of gaseous fuels. Prerequisite, M. E. (20). Streeter's Internal Combustion Engines.

(22) HYDRAULIC MOTORS.

Two Credits. **Two Hours.**
Second Semester.

Action of water on curved vanes. Forces developed and effect of impact. Work done. Centrifugal action. Reaction turbines. Vane form and arrangement. Axial, radial and mixed flow wheels. Losses due to friction, shock, leakage and residual velocity. Impulse turbines. Experiments with turbines of various types. Governors. Centrifugal pumps. Theory. Radial and curved vanes. Velocity of flow. Volute. Diffuser. Guide vanes in diffuser. Impeller passages. Balancing. Losses. Efficiency. Selection and arrangement of water-wheels. Governors and auxiliary apparatus. Relation between available water supply, possible output and perfection of development work. Draft tubes. Stop valves. Gates. Vacuum and pressure relief stand pipes. Analysis of typical installations. Water power costs.

Prerequisite, C. E. (21). Daugherty's Hydraulic Turbines.

(23) INDUSTRIAL ENGINEERING.

Two Credits. **Two Hours.**
First Semester.

The economic element in shop processes. Conditions for most economic production. Functional operation of machine tools. Limits of economic production. Machines for performing specific operations. Time study. Labor saving devices in the shop. Distribution of cost of machine production between different processes, power, labor and material. Fixed charges. Layout of shops for most direct production.

Layout of system of management and cost determining system. Pre requisite, M. E. (13). Diemer's Factory Organization and Administration.

(24) INDUSTRIAL ENGINEERING.

Three Credits. **Three Hours.**
Second Semester.

Continuation of (23). Prerequisite, M. E. (23).
Galbreith's Time Study.

(25) HEATING AND VENTILATION.

Two Credits. **Two Hours.**
First Semester.

Theory and design of the various systems for heating and ventilating buildings, including Hot Air, Hot Water, Steam and the plenum and vacuum systems and central station heating. Hoffman's Handbook for Heating and Ventilating Engineers.

(26) HEATING AND VENTILATION.

Two Credits. **Two Hours.**
Second Semester.

Continuation of (25). Prerequisite, M. E. (25).

(27) TECHNICAL LITERATURE.

One Credit. **One Hour.**
Second Semester.

Reading and reports from current Engineering literature.

MODERN LANGUAGES.

(1) FRENCH.

Four Credits. **Four Hours.**
First Semester.

In this course the student is carefully drilled in elementary grammar up to the irregular verbs, attention also being given to acquiring a vocabulary of the more common words.

(2) FRENCH.

Four Credits. Four Hours.
Second Semester.

A continuation of the preceding course. Special attention is given to the more important irregular verbs, the memorizing of words, and translation of French into English and vice versa.

(3) GERMAN.

Four Credits. Four Hours.
First Semester.

Elements of German grammar. Drill in pronunciation. Vocabulary.

(4) GERMAN.

Four Credits. Four Hours.
Second Semester.

A continuation of Course 3. Syntax. Oral and written exercise. Reading from the more simple German prose.

(5) SPANISH.

Four Credits. Four Hours.
First Semester.

Elements of Spanish grammar. Drill in pronunciation. Vocabulary. Translations.

(6) SPANISH.

Four Credits. Four Hours.
Second Semester.

Continuation of (5).

PHILOSOPHY.

(1) LOGIC.

Three Credits. Three Hours.
First Semester.

The reasoning faculties and processes. Laws of thought. Truth. Certitude. Doubt. False systems.

(2) ONTOLOGY. PSYCHOLOGY.

Three Credits. **Three Hours.**
Second Semester.

Being, its origin, development, explanation. Life, its origin and kinds. Origin of Species. Darwinism. Huxley. Haeckel. The Soul, its origin and spirituality.

(3) THEODICY.

Three Credits. **Three Hours.**
First Semester.

God, His existence, nature and attributes. Creation. Providence. Miracles.

(4) ETHICS.

Three Credits. **Three Hours.**
Second Semester.

Right and Wrong. Natural Law. Sanction of Law. False forms of Morality. Worship. Homicide. Suicide. Dueling. Society. Marriage. Divorce. Socialism. Theories of Government. Suffrage. Liberty of the Press. Church and State.

PHYSICS.

(1) MECHANICS, MOLECULAR PHYSICS, SOUND.

Five Credits. **Three Hours Lecture, Four Hours Laboratory.**
First Semester.

General principles of matter. General properties of Bodies. Equilibrium. Gravity. The balance. Laws of falling bodies. Pendulum. Properties peculiar to solids. Hydrostatics. Capillarity, endosmose, diffusion, absorption. Hydrodynamics The properties of gases. Barometers. Measurement of the elastic force of gases. Aerodynamics. Production, propogation and reflection of sound. Measurement of the number of vibrations. The physical theory of music. Prerequisite, must be taking Eng. Math. (4). Reed & Guthe s Physics.

(2) LIGHT, HEAT, ELECTRICITY.

Five Credits. Three Hours Lecture, Four Hours Laboratory.
Second Semester.

Transmission, velocity, intensity and reflection of light. Mirrors. Single refraction. Lenses. Dispersion and achromatism. Optical instruments. The eye. Sources of light. Phosphorescence. Double refraction. Interference and polarization. Properties of magnetism. Methods of magnetism. Law of magnetic action. Terrestrial magnetism. Fundamental principles of frictional electricity. Quantitative laws of electric action. Distribution. Electro-static induction of influence. Electric machines. Condensation of electricity. Voltaic cell. Its modifications. Magnetic field due to current. Galvanometers. Ohm's law. Conversion of electric energy and heat. Thermo-electricity. Electro-dynamics. Electro-magnets. Magnetization of iron. Telegraphy. Electro-magnetic induction. Passage of electricity through gases. Magneto and dynamo electric machines. Diamagnetism. Connection between electricity and light. Physiological action of the current. Animal electricity. Prerequisite, Phy. (1). Reed & Guthe's Physics.

(3) ELECTRIC MEASUREMENTS.

One Credit. One Hour.
First Semester.

Elementary electro-statics. Electrification by friction, conduction and induction. Magnetism. Determination of horizontal force and magnetic moment. Fundamental experiments in Voltaic electricity. The galvanoscope and the galvanometer. Determination of E. M. F. Wheatstone's bridge. Calibration of galvanoscope. Measurements of resistance. The high resistance differential astatic galvanometer. Measurement of galvanometer resistance. Thomson's method. Differential method. Use of slide meter bridge. Carey Foster's method. Measurement of very low resistances. The method of comparison of potentials, projection of equal potentials and auxiliary conductors. Measurement of high resistance. The direct deflection method. Electrolyte

resistance. Electrolytic resistance by alternating currents. The tangent galvanometer. Use of the standard galvanometer and the determination of E. M. F. Application of Joule's law. Use of potential galvanometer. Determination of the magnetic elements. Electro-magnetism and electro-magnetic induction. Action of linear current on magnet. Biot and Savart's law. Proof of electro-magnetic laws. Magnetic action of a solenoid. Laws of the electro-magnet. Induction experiments. Induction balance of Hughes. Damping. Comparison of resistance by magneto conductor. Use of earth inductor. Study of magnetic distribution. The condenser. Determination of the absolute capacity of a condenser. Electrometers. Prerequisite, Phys. (2). Reed & Guthe's Physical Measurements.

POLITICAL ECONOMY.

(1) POLITICAL ECONOMY.

One Credit. **One Hour.**

Second Semester.

Object. Production, distribution, circulation and consumption of wealth. Production of wealth. Earth and natural agents. Labor and industry. Capital. Distribution of wealth. Individual property. Share of laborers. Circulation of wealth. Exchange. Taxes. Applications. This course is designed to give the student a broader view of his standing as a professional man in the community.

SENIOR HALL, UNIVERSITY OF SANTA CLARA, LOOKING SOUTH

Institute of Law

Institute of Law

PURPOSES AND METHOD OF THE INSTITUTE OF LAW.

The purposes of the Institute of Law are:

To give a thorough training in the fundamental principles of English and American law, and the modifications thereof peculiar to the State of California;

To guide the student by actual practice in office work and court procedure to a proper application of the principles of law to concrete cases;

Finally, to imbue the student with the correct ethical principles that should govern the legal profession.

The method of instruction followed is the Case system,—an exact discussion of the cases presented in the best manuals with a view to deriving the principles which have determined their decision. This study of rules and principles is never lost sight of by the Professor and is rigidly exacted from the student in all examinations.

PRACTICE COURT.

The Institute of Law maintains a system of practice courts which is modeled essentially on the California system of courts of record, and consists of the Superior Court, the District Court of Appeals and the Supreme Court.

The Superior Court is presided over by a member of the Faculty, at present Hon. William Arthur Beasly, Judge of the Superior Court, San Jose, Cal. The court holds weekly sessions at which business is transacted in the manner usual before state courts, with the constant instruction, advice and correction of the presiding judge. On given statements of fact, student counsel issue, serve and return regular process, prepare and file the proper pleadings according to the California Code practice argue demurrers, impanel juries, exam-

ine witnesses, and in brief, carry their cases through from summons to final judgment.

Every student in good standing is admitted to the bar in the middle of his second year in the school, and is required to act as counsel in not less than two cases in every semester. Subordinate officers of the court, clients, witnesses, and jurymen are drawn from among the second year students. All students, except those of the first year, are required to attend every session of the courts and they receive credit therefor.

The District Court of Appeals and the Supreme Court hold sessions as often as business requires. They are also under the general supervision of a member of the Faculty, at present Hon. John E. Richards, Associate Justice of the District Court of Appeals for the First Appelate District.

Court is held in a specially furnished court-room.

Lectures on particular phases of the law are given from time to time by the Faculty and by occasional lecturers.

PHILOSOPHY AND POLITICAL ECONOMY.

Thorough courses in Philosophy and Political Economy, covering a period of two years are offered by the University in the College of Philosophy and Letters.

All law students who are candidates for the Degree of Bachelor of Arts or Bachelor of Science are required to follow these courses.

Other law students are urged to do so but not obliged.

The Faculty strongly recommend all students to take advantage of these courses because they are of great value in developing the reasoning faculties and in grounding the student in sound principles of ethical conduct—two things absolutely necessary to the soundest and highest success in the legal profession.

SESSIONS AND HOURS.

The school year in the Institute of Law is the same as that for the University in general. It consists of two semesters:

The first semester begins August 23rd, 1921, and ends December 21st, 1921.

The second semester begins January 4th, 1922, and ends May 31st, 1922.

The recess at Thanksgiving begins November 22nd, 1921, and ends November 27th 1921.

The recess at Christmas begins December 21st, 1921, and ends January 4th, 1922.

The recess at Easter begins April 12th, 1922, and ends April 17th, 1922.

Classes in Philosophy and Political Economy are held during morning hours except on Wednesdays. The length of the period is fifty minutes.

Classes in legal subjects are held every evening, Wednesday included, at 6:55, and also on Saturday afternoon at 2:30. The length of the period varies from one to one-half hours. There are two such periods every evening, making a total of fourteen class-hours in legal subjects.

ENTRANCE REQUIREMENTS.

The Institute of Law is open to the following classes of students:

1st. Those who have the degree of Bachelor of Arts, Bachelor of Science, or their equivalent, from this or some other college or university.

2d. Those who have completed the first two years of college work either at this University or at some other college or university, offering satisfactory courses leading to academic degrees. Students of this class may complete their college work by following the Junior and Senior courses in Philosophy in the College of Arts and Sciences, and thus receive the degree of Bachelor of Arts or Bachelor of Science at the end of their second year in the Institute of Law, and the degree of Juris Doctor or Bachelor of Laws (according to their qualifications) at the end of the third.

Students of the first and second classes are regular students.

3d. Those whose experience in business or whose private study has made up for their lack of collegiate training and whose maturity and seriousness fit them in the discretion of the Faculty, for the study of law. Such are, for example, young men employed in insurance and real estate offices, banks, railroad offices and law firms, as well as those who have studied privately and so acquired knowledge for which, because of its variety and mode of acquisition, educational institutions are unable, as a rule, to give credit. These are **special students.**

Advanced Standing. Any person who, after becoming entitled to enter the Institute of Law as a regular or special student, has been in regular attendance for at least one academic year at another law school, having similar admission requirements, may in the discretion of the Faculty of the Institute of Law, and on such terms, with or without examination, as it may prescribe, receive credit for the work done at such other law school not exceeding in any case two years. The last year must be spent in residence in the Institute of Law.

THE COURSES.

New subjects are entered upon at the beginning of each semester thus ensuring concentration of attention on a few subjects at a time, and also making it convenient for students to enter in January as well as in August.

PRE-LEGAL.

ELEMENTARY LAW. **Instructor Harmon.**

Three Hours, Two Semesters.

This course is given principally to students in the Sophomore year of the College of Letters and of General Science, who intend to enter the Institute of Law in the next year.

Robinson's Elementary Law, 2d Ed.

MENTAL PHILOSOPHY, MORAL PHILOSOPHY, PSYCHOLOGY AND POLITICAL ECONOMY.

The regular courses in these subjects, given in the College of Letters and General Science are open to all students of the Institute of Law.

FIRST YEAR.

The subjects taught in the first year of law do not vary from year to year.

(1) **CRIMINAL LAW.** Professor Sex.

One and One-Half Hours, First Semester.

Mikell's Cases on Criminal Law and Procedure.

(2) **CRIMINAL PROCEDURE.** Professor Sex.

One and One-Half Hours, Second Semester.

This course is conducted in a practical manner and includes the preparation of criminal pleadings, and the court work incidental to trials for crime. The professor sits as judge, with the students as officers, jurors and witnesses.

Penal Code of California and selected California Cases.

Mikell's Cases on Criminal Law and Procedure.

(3) **TORTS.** Professor Jones.

Five Hours, Second Semester.

Burdick's Cases, Third, Ed.

(4) **PROPERTY I.** Professor Bressani.

Four Hours, First Semester.

Warren's Cases.

(5) **AGENCY.** Professor N. Bowden.

Three Hours, Second Semester.

Huffcut's Cases.

(6) COMMON LAW PLEADING. Professor Richardson.
Four Hours, First Semester.

Sunderland's Cases.

(7) CONTRACTS AND QUASI-CONTRACTS.
Professor A. Bowden.
Three Hours, Both Semesters.

Huffcut & Woodruff's Cases, 2d Ed.

(8) DEBATING.
One and One-Half Hours, Both Semesters.

SECOND AND THIRD YEARS.

The following subjects are pursued together by the students of the second and third years, except as noted, and while all of these subjects are not given in any single year, the course is so varied that every student by the end of his third year has seen all the important branches of the law.

(9) PRACTICE COURT. Professor Sex.
One and One-Half Hours, Both Semesters.

All second year students are admitted to practice at the first session of the Practice Court for the second semester.

(10) DEBATING.
One and One-Half Hours, Both Semesters.

(11) DOMESTIC RELATIONS. Professor Bressani.
Two Hours, One Semester.

Woodruff's Cases, 2d Ed.

(12) TRUSTS. Professor Jones.
Three Hours, Second Semester.

Kenneson's Cases.

(13) CODE PLEADING. Professor Richardson.
Four Hours, One Semester.

Sunderland's Cases.

(14) **CONSTITUTIONAL LAW.** Professor Coolidge.
Three Hours, One Semester.

Boyd's Cases, 2d Ed.

(15) **PRIVATE CORPORATIONS.** Professor Coolidge.
Three Hours, One Semester.

Richard's Cases.

(16) **WILLS AND PROBATE LAW.** Professor Jones.
Three Hours, One Semester.

Costigan's Cases.

(17) **EVIDENCE.** Professor Bloomingdale.
Four Hours, One Semester.

Wigmore's Cases, 2d Ed.

(18) **NEW TRIAL AND APPEAL.** Professor Richardson.
Two Hours, One Semester.

Lectures and Code of Civil Procedure and California Cases.

(19) **EQUITY.** Professor Coolidge.
Three Hours, First Semester.

Throckmorton's Cases and Eaton on Equity.

(20) **EQUITY PLEADING.** Professor Richardson.

Lectures and syllabi of Professor.

(21) **BILLS AND NOTES.** Professor Bressani.
Three Hours, Second Semester.

Bunker's Cases.

(22) **CALIFORNIA PRACTICE.** Professor Richardson.
Four Hours, Second Semester.

Lectures, Codes of Civil Procedure of California and Selected California Cases.

(23) PROPERTY II. Professor Bloomingdale.
Five Hours, First Semester.

Finch's Cases.

(24) CONFLICT OF LAWS. Professor Coolidge.
Two Hours, One Semester.

Dwyer's Cases, 2d Ed.

(25) PARTNERSHIP. Professor N. Bowden.
Two Hours, First Semester.

Gilmore's Cases.

(26) INSURANCE. Professor Bloomingdale.
Two Hours, One Semester.

Richard's Cases.

(27) SALES. Professor Bloomingdale.
Three Hours, First Semester.

Burdick's Case, last Ed.

(28) MORTGAGES. Professor Bloomingadle.
Two Hours, Second Semester.

Kirchway's Cases.

(29) CALIFORNIA PROBATE PROCEDURE.
Professor Richardson.
Two Hours, Second Semester.

Syllabi, Lectures, Selected Cases.

(30) FEDERAL PROCEDURE. Professor Sex.
One and One-Half Hours, One Semester.

The following additional work must be done privately under the supervision and direction of a member of the Faculty, by all candidates for the degree of Juris Doctor:

(31) ROMAN LAW.

Synopsis, quiz and written examinations as in other law courses, i. e., monthly and at the end of each semester.

Sohm's Institutes of Roman Law (Ledlie) 3rd Edition.

(32) INTERNATIONAL LAW.

Synopsis, quiz and written examinations as in other law courses, i. e., monthly and at the end of each semester.

Taylor's International Law, "Cyc", "International Law", "War".

(33) HISTORY OF ENGLISH LAW.

Synopsis, quiz and written examinations as in other law courses, i. e., monthly and at the end of each semester.

Pollock & Maitland.

(34) THESIS. See page 136, sec. 3.

SUMMARY OF COURSES TO BE GIVEN IN 1921-1922.

PRE-LEGAL	Hours 1st Semester.	Hours 2d Semester.
Elementary Law	3	3
FIRST YEAR.		
Criminal Law	1½	
Criminal Procedure		1½
Torts		5
Property I		4
Agency	3	
Common Law Pleading	4	
Contracts	3	3
Debating	1½	1½
	13	15
SECOND YEAR.		
Trusts	3	
Mortgages		2
Equity	3	
Bills and Notes		3
Property II	4	
Insurance		2

	Hours 1st Semester.	Hours 2d Semester.
Sales	2	
Private Corporations		3
Debating	1½	1½
Practice Court	1½	1½
	15	13

THIRD YEAR.

Trusts	3	
Mortgages		2
Equity	3	
Bills and Notes		3
Property II	4	
Insurance		2
Sales	2	
Private Corporations		3
California Probate Practice		2
Practice Court	1½	1½
	13½	13½

EXAMINATIONS.

Written examinations are held monthly in all subjects. Written examinations are also held twice a year on the work of the preceding semester.

Oral Examinations. In addition to the above-mentioned written examinations, at the end of the school year, each student must present himself before an examining board of not less than three members of the Law Faculty and be orally examined by them for forty minutes on the work of the past school year.

The general provisions set out elsewhere in this catalogue relating to Examinations, Promotions, Conditions and Re-examinations, Attendance and Credits, apply to all students of the Institute of Law. Reference is made to them for fuller information. See page 33.

GRADUATION.

The Faculty of the University reserve the right to make the conditions stricter than they now are for entrance and for graduation, and to provide, if they see fit, that such changes when made shall effect all students enrolled in the Institute of Law on or after September 2, 1914.

The Faculty is now considering the advisability of increasing the time of study for graduation in law to FOUR YEARS, and this change, if made, will affect all students entering the Institute of Law on or after August 18, 1915

The following regulations shall apply to all students who enter the Institute of Law on or after September 2, 1914:

In order to graduate or receive the certificate, the student must have completed the regular course of the Institute of Law. This implies:

1. Credit for at least eighty-four credit hours (a credit is the equivalent of one hour a week for one semester). No one is allowed a credit in any course at which he has not been present ninety per cent of the class hours, and in which his average is not at least passing (seventy per cent).

2. Residence of at least three years in a standard law school, one year of which must have been spent in this Institute of Law.

3. The submission of a satisfactory thesis on some legal question selected by the student and approved by the Faculty. Said thesis must be submitted in accord with the following

REGULATIONS.

The thesis must contain not less than five thousand words.

It must represent original work and thought.

It must consist of a thorough discussion of the cases bearing upon the subject, and must not be a mere series of extracts from cases or treatises, loosely strung together.

Pertinent authorities must be cited by giving the volume and page, and also the particular case referred to. In addition to the ordinary citation, the writer should also give the

place where the same case may be found in the selected case series and the Reporter system.

It must be in typewriting on paper 8½ by 11 inches in size.

The submission of an acceptable thesis is an absolute prerequisite to admission to final examinations.

4. In addition to the above requirements, candidates for the Juris Doctor degree must pass all required tests in Roman Law, International Law, and the History of English Law.

DEGREES AND CERTIFICATES.

Having thus qualified for graduation, the student will be given either the Degree of Juris Doctor (J. D.), the Degree of Bachelor of Laws (LL.B.), or a certificate stating that he has satisfactorily completed the course in legal subjects given in the Institute of Law.

The Degree of **Juris Doctor** will be conferred upon the following classes of students providing they have complied with Section 4 of the conditions of graduation:

1st. Those who entered with the degree of A. B. or B. S., or their equivalent from this University or a college or university of recognized standing.

2d. Those who, having entered with credit for the first two years of college work have completed the course in Philosophy and Political Economy along with their legal studies and have received the degree of A. B. or B. S. from this University.

The Degree of **Bachelor of Laws** will be conferred upon the following classes of students:

1. Those possessing other academic degrees as just explained, who have not complied with Section 4 of the conditions of graduation.

2. Those who, having entered after the completion of the first two years of college work, have confined themselves to law and have maintained throughout their course an average of eighty-five per cent in each subject separately.

3. Those who, having entered after the completion of the first two years of college work have done satisfactory work in some subjects included in the courses of Philosophy and

Political Economy, such work being insufficient to warrant conferring on them the degree of A. B. or B. S., and who have, in addition, maintained throughout their course an average of eighty-five per cent in every legal subject. Where a student has done such work, but, while reaching a passing mark, has fallen below said average of eighty-five per cent in every legal subject, he may nevertheless be awarded the degree of Bachelor of Laws by special action of the Faculty, the degree of allowance made him being proportioned to the number of hours' work satisfactorily done in Philosophy and Political Economy.

The **Certificate** will be conferred upon the following classes of students:

1. Special students who have throughout their course maintained an average of eighty-five per cent in every legal subject.

2. Special students, who, in addition to their work in law have done satisfactory work in the courses in Philosophy and Political Economy or some subjects included therein, and who have also maintained an average of eighty-five per cent in every legal subject. Where a student has done such work, but, while reaching a passing mark has fallen below said average of eighty-five per cent in every legal subject, he may nevertheless be awarded the certificate, by special action of the Faculty, the degree of allowance made him being proportioned to the number of hours' work satisfactorily done in Philosophy and Political Economy.

THE DISTRICT COURT OF APPEAL

of the

UNIVERSITY OF SANTA CLARA

1920-21

HON. JOHN EVAN RICHARDS, A. B., LL. B.,
Presiding Judge.

James Bartholomew O'Connor, Clerk.
Peter Francis Morettini, Reporter.
Randall Oswald O'Neill, Bailiff.

THE SUPERIOR COURT

of the

UNIVERSITY OF SANTA CLARA

1920-21

PROFESSOR JAMES P. SEX, Ph. D., J. D.,
Judge.

Chester Daniel Moore, Clerk.
Richard Ignatius McCarthy, Bailiff.

REGISTER OF LAW STUDENTS.

Ext.—Student residing outside the University.
Res.—Student residing within the University.
Jr.—In Junior Philosophy and Political Economy.
Sr.—In Senior Philosophy and Political Economy.
Spec.—Special, not in regular course.

THIRD YEAR.

Diaz, Demetrio, B. S. '19		Res.	Tampico, Mex.
Henderson, Joseph Wulffing, B. S. '20		Ext.	San Jose
Jaeger, Eugene Richard, B. S. '20		Ext.	Santa Clara
Morettini, Peter Francis, A. B. '20		Ext.	San Jose
Moroney, Thomas James, B. S. '20		Ext.	San Jose
O'Connor, James Bartholomew, A. B. '20		Res.	San Francisco
O'Neill, Randall Oswald, B. S. '20		Ext.	San Jose
Purdy, Ralph Stuart	Spec.	Ext.	San Jose
Sullivan, William Ward, A. B. '20		Ext.	Santa Clara

SECOND YEAR.

Antonioli, Casimir Andrew	Sr.	Ext.	Mountain View
Burke, Donald Russell	Sr.	Res.	Seattle, Wash.
Cashin, Harold John	Sr.	Res.	Los Angeles
Coman, Edmund Zan	Sr.	Res.	Portland, Ore.
McCarthy, Richard Ignatius	Sr.	Ext.	San Jose
Moore, Chester Daniel	Spec.	Ext.	San Jose
Murphy, John Wilfred	Sr.	Ext.	San Jose
Veit, Henry Charles, B. S. '22		Res.	Newark

FIRST YEAR.

Argenti, Tullio Anthony	Jr.	Res.	San Francisco
Cassin, Charles Michael, Jr.	Jr.	Ext.	San Jose
Connell, John Howard	Jr.	Res.	Seattle, Wash.
Crowe, Thomas	Jr.	Res.	Tulare
Fellows, Edward Martin	Spec.	Ext.	Santa Clara
Fields, Joaquin Lawrence	Spec.	Ext.	Niles
Fitzpatrick, Joseph Robert	Jr.	Ext.	Redwood City

Kerckhoff, Porter Thomas	Jr.	Res.	Covina
Logan, John Alphonsus	Jr.	Res	Seattle, Wash.
McCarthy, Adair Bernard	Jr.	Res.	Townsend, Mon.
Moran, Frederick John	Jr.	Res.	San Francisco
Morgan, Robley Evans	Spec.	Ext.	Santa Clara
Murphy, Martin Murtha	Jr.	Res.	Milpitas
O'Shea, John Francis	Jr.	Res.	Gait
Pancera, John Dennis	Spec.	Ext.	San Jose
Patten, Gerald Cyril	Jr.	Res.	Seattle, Wash.
Pecarovich, Michael Joseph	Jr.	Res.	Seattle, Wash.
Rethers, Frank Albert	Jr.	Res.	San Francisco
Sperry, Thomas Alexander	Jr.	Ext.	San Jose
Sturdivant, Tallentyre Basil	Jr.	Res.	San Anselmo
Trabucco, Louis James	Jr.	Res.	Mariposa
Walsh, Martin Simon	Spec.	Ext.	Santa Clara
Wilkins, Raymond Gordon	Spec.	Ext.	San Jose

School of Pedagogy

SCHOOL OF PEDAGOGY

The growing demand for young men in the teaching profession, in which male teachers are comparatively few, is being met by the Colleges and Universities of the United States in various ways.

The University of Santa Clara has not neglected to do her part in this work, though for the most part her graduates who have entered the teaching profession have found congenial employment in the Preparatory or High School of the University. With the growth of the teaching profession and the increased demand for male teachers and the increased salaries offered them, it is but natural that in the coming years an ever increasing number of young men will elect to follow this noble calling which possesses such a fascination for men who have the gifts requisite for such work.

The University offers the following special courses in pedagogy. The student will find in them in due proportion the history, theory and practice of education. The practical work in education is conducted in the Preparatory Department of the University, under the direction of experienced teachers.

(1) HISTORY OF EDUCATION.

Three Credits. **Three Hours, One Semester.**

A historical treatment of the various systems of education, in ancient, medieval and modern times.

(2) SYSTEMS OF EDUCATION.

Two Credits. **Two Hours, One Semester.**

A study of the principal systems of education. The various principal systems are first studied by themselves and then a comparative study is made.

(3) EDUCATIONAL PSYCHOLOGY.

Three Credits. **Three Hours, One Semester.**

A brief course in psychology and the bearing of certain psychological facts on the work of education. Mental development. Instincts. Individuality.

(4) CHILD STUDY.

Two Credits. **Two Hours, One Semester.**

A special course in the psychology of childhood. Physical and mental development.

(5) PHILOSOPHY OF EDUCATION.

Two Credits. **Two Hours, One Semester.**

The definitions of education. False notions of education. The principles underlying all education.

(6) EDUCATION IN THEORY AND PRACTICE.

Two Credits. **Two Hours, One Semester.**

A more detailed study of the theory of education; educational methods. Actual practice in the classroom.

(7) CLASSROOM MANAGEMENT.

Two Credits. **Two Hours, One Semester.**

Discipline. Order. Forms of discipline. Factors in discipline.

(8) HIGH SCHOOL ADMINISTRATION.

Two Credits. **Two Hours, One Semester.**

History and place of the High School in the American Educational System. Programs of Studies. Divisions of time. Order of Classes. Marking of pupils. Records. Reports. Texts. Teachers.

Pre-Medical Course

PRE-MEDICAL COURSE

This course is designed to comply with the requirement of the best medical schools in the United States, and to give the student a preliminary laboratory training which will familiarize him with future work.

FRESHMAN YEAR.

Before entering upon their Freshman year the students must have completed the regular High School curriculum of the College, or an equivalent amount to 16 units as described on page 46, consisting of courses in English Literature, the Classics, History, English Composition, Mathematics, German or French.

These same subjects are continued during the Freshmen and Sophomore years. During the Junior and Senior years, besides the work outlined above, they receive thorough courses in Logic, Ontology, Psychology, Ethics and Political Economy to the amount of ten semester hours.

For the courses in Literature, History and Philosophy see these subjects in the Colleges of Philosophy and Letters and General Science.

CHEMISTRY.

(a) GENERAL INORGANIC CHEMISTRY.

Six Credits. **Lecture Three Hours, One Year.**

Fundamental laws of Chemistry. Chemical problems and equations. Study of the elements and principal compounds.

(b) GENERAL INORGANIC CHEMISTRY.

Two Credits. Laboratory Four Hours, One Semester.

(This course accompanies course 1.)

Practical demonstration of Chemical Laws and Theories. Preparation of principal elements and compounds, together with the practical demonstration of their properties, tests, combinations and decompositions.

(c) QUALITATIVE ANALYSIS.

Two Credits. Laboratory Four Hours, One Semester.

Wet methods. Detection of metals, non-metals and acid radicals. Use of the blow-pipe.

(See Courses 1, 2, 3, 6, in Chemistry, pages 61 and 62.)

SOPHOMORE YEAR.

PHYSICS.

Ten Credits. Lecture Three Hours.
Laboratory Four Hours, One Year.

Mechanics, Sound, Light, Heat, Electricity, Physical Measurements.

(See Courses 1, 2, 3, 4, in Physics, page 58.)

JUNIOR YEAR.

CHEMISTRY.

1. (a) GENERAL ORGANIC CHEMISTRY.

Six Credits. Lecture Three Hours a Week, One Year.

Constitution, Classification, Decomposition and Synthesis of Organic Compounds. Paraffins, Olefins, Acetylenes, Terpenes, Benzenes and their derivatives.

(b) GENERAL QUANTITATIVE ANALYSIS.

Two Credits. Laboratory Four Hours, One Semester.

Gravimetric, Electrolytic, Volumetric methods. Preparation of standard solutions.

(c) GENERAL EXPERIMENTAL ORGANIC CHEMISTRY.
Two Credits. Laboratory Four Hours, One Semester.

Practical demonstrations of properties, tests, combinations and decompositions of organic compounds. Preparation and study of typical organic substances.

(Courses 2 and 3 accompany Course 1.)

(See Courses 7, 8, 9, in Chemistry, page 63.)

GENERAL BIOLOGY.

2. This course is divided into two semesters, the first of which is occupied mainly with Structural and Physiological Botany, and the second with Zoology and a brief course in Cytology. Seven hours a week are devoted to the subject, this time being divided between lectures and laboratory at the discretion of the Professor.

FIRST SEMESTER.

(a) Lecture and Laboratory, Seven and One-Half Hours.
Five Credits. One Semester.

Scope and subdivision of the science. Distinction between Vital and Non-Vital forces. Botany. The seed. Structure. Chemistry of the food supply. Consideration of Dicotyledonous and Monocotyledonous forms. Germination. Chemistry of Germination. Enzymes and Enzymic action. Development of seedling. Photosynthesis. The root and its various forms. Root hairs and study of Osmosis. The stem. Vascular system and nature of fluid movements. The Leaf. Nature of work and study of Stomata. Consideration of hygroscopic movements. Endogenous and Exogenous growth. Fertilization and structure of the flower. Thallophyta. The Algae. Kelp. Spirogyra. Cladophora and similar types. The Fungi. Reproduction in the Thallyophytes and Evolution of Sex. The Briophyta. Study of methods of reproduction and formation. Pteridophyta. Special study of the Fern. Histology of the Fern. Brief consideration of Zonation.

SECOND SEMESTER.

(b) Lecture and Laboratory, Seven and One-Half Hours.
Five Credits. One Semester.

The Cell. Anatomy and Metabolism. Protoplasm and its nature. Karyokinesis. Cell Continuity. Importance of Cytology to Biology. Phenomena of Maturition. Reproduction. Various theories of Evolution and Heredity. Heredity and Mendelism. Colloidal and Crystalloidal states of matter. The Protozoa. Amoeba. Paramoecium. Vorticella. Porifera, Coelenterata, Echinodermata, Molusca, Arthropoda, The Chordata; a selection is made and dissections required. Dissection and study of the Earthworm. Dissection and study of the Frog or Toad. Dissection and study of the Cat or the Rabbit. Brief Comparative Anatomy. Personal Hygiene.

SENIOR YEAR.

HISTOLOGY, BACTERIOLOGY AND EMBRYOLOGY.

3. (a) GENERAL AND SPECIAL HISTOLOGY.

Five Credits. Lecture Two and One-Half Hours, One Year.

The Cell. Epithelial, Connective, Muscle and Nerve Tissues, Circulatory and Lympathic Systems. Alimentary Tract. Digestive Glands. Respiratory, Urinary and Genital System. Skin and its appendages. Eye, Ear, Senses of smell, touch and taste.

(b) HISTOLOGY.

Three Credits. Laboratory Six Hours, One Year.

Use of microscope. Preparation and examination of stained and unstained tissues. Slide technique with Paraffin and Celloidin. Study of prepared slides.

4. (a) BACTERIOLOGY.

Three Credits. Six Hours, One Semester.

A course including the history and definition of the sci-

ence. Nature and classification of bacteria. Their morphology, grouping, mode of multiplication, spore formation, motility. Principles of sterilization. Principles involved in the methods of isolating bacteria.

Study of different culture media. Principles of Aerobic and Anaerobic Cultures. Biological properties of the more important bacteria.

Principles of Toxins, Antitoxins, Agglutinins, Precipitins and Vaccines.

(b) LABORATORY.

Technique of bacteriological study. Culture media.

5. (a) EMBRYOLOGY.

Three Credits. **Six Hours, One Semester.**

Cell Division.

Spermatozoon and spermatogenesis. Ovum. Ovulation.

Maturation, Migration and Impregnation.

Segmentation and general development—Foetal membranes. Development of Special Organs.

Heart—Primary and secondary embryonic circulations.

Spinal Cord and Brain—Histogenesis of the Nervous System.

Alimentary and Respiratory Tracts—Mouth, pharynx, oesophagus, stomach, intestines, liver, pancreas.

Urinogenital System—Development of Kidneys, ureter and sex organs.

Development of the Skeletal System—Muscles and special sense organs.

(Development of special organs is an elementary course.)

(b) LABORATORY.

Study of chick embryo in living specimens, 24-72 hours incubation.

Study of chick embryo whole mounts, 4 segments to 72 hours. Study of serial, cross and sagittal sections of chick embryo, 4 segments to 72 hours.

Study of each development of organs supplemented by modeling. Dissection of hardened pig embryos.

THE ASTRONOMICAL, METEOROLOGICAL AND SEISMOLOGICAL OBSERVATORY

JEROME SIXTUS RICARD, S. J.,
Director, Forecaster and Seismologist.

ALBERT JOSEPH NEWLIN, B. S., J. D.,
Assistant in Meteorology and Seismology.

Student Assistant—James Cavanaugh Glynn.

Commercial Department

COMMERCIAL DEPARTMENT

These courses require a definite amount of work, but the time for completion depends entirely upon the ability and the application of the student. Free range is given to individual effort. The course of study is so arranged that studies in other departments of the University may be pursued also. The general and the technical subjects are combined to give mental discipline and general culture, at the same time preparing the student for the practical affairs of business. All students in the Department are required to attend one of the English courses in the Preparatory or High School Department.

Besides written examinations, each candidate for graduation is orally examined by a committee of the Faculty for thirty minutes in all the subjects seen during the past year.

The general provisions regarding Attendance, Examinations, Promotions, Conditions, etc., set forth elsewhere in this catalogue, apply also to this Department.

Upon graduation, each student is given the Commercial Certificate.

FIRST YEAR.

(1) ELEMENTARY BOOKKEEPING.

One-Quarter Credit. **Five Hours, First Semester.**

Using from the first, sales-book, purchase-book, cash-book, journal and ledger. Drills in journalizing, statements, business forms. Text: Rowe.

(2) WHOLESALE ACCOUNTING.

One-Quarter Credit. **Five Hours, Second Semester.**

With the special features of columnar work, controlling accounts, general ledger and sales ledger, analysis sheets, note books as posting mediums, loose-leaf sales book, posting from orders, and valuable drills in arithmetic and commercial paper, several different forms of balance sheets. Text: Rowe.

(3) BUSINESS SPELLING.

One-Fifth Credit. **One Hour, Two Semesters.**

Including a study of roots, prefixes, suffixes, syllabication, diacritical marks, spelling rules, defining words, and their use in sentences. Text: Marshall.

(4) PENMANSHIP.

One-Quarter Credit. **Five Hours, Two Semesters.**

Particular attention is given to position, form, movement and speed. Drills are given on various movement exercises, to help get smooth lines, to establish correct pen-holding, to loosen the muscles, to increase the speed, to fix firmly the habit of correct movement, and thus lay the foundation for a good business hand. Prescribed for all students of bookkeeping. Text: Zaner.

(5) ENGLISH ESSENTIALS AND LETTER WRITING.

Two-Fifth Credit. **Two Hours, Two Semesters.**

Special attention is devoted to correcting the student's deficiencies and developing accuracy in grammar, punctuation, the use of words and discrimination of synonyms. The student writes a series of business letters, in accordance with data and conditions furnished by the instructor, who carefully examines, marks for corrections and returns them to the student to be rewritten. Texts: Effective Business Letters, Gardner; Lessons and Exercises in English, Dengler; Office Training and Standards, McClelland.

(6) BUSINESS ARITHMETIC AND RAPID CALCULATION

One Credit. **Five Hours, Two Semesters.**

Addition drills, invoice extension, percentage as applied to business problems, profit and loss, commission, trade discounts, insurance, interest by banker's method training the student to solve the various problems with the fewest possible figures, banker's daily balances, savings accounts, exchange, metric system, equations and cash balance, dividends and investments, partitive proportion, partnership and stor-

age. Short practical methods emphasized. Text: Moore and Miner, McIntosh.

SECOND YEAR.

(7) BUSINESS PRACTICE AND ADMINISTRATION

One-Half Credit. **Five Hours, Two Semesters.**

Here the student learns bookkeeping practically by recording the transactions as they arise not knowing beforehand what will take place. The students buy and sell; money is paid and received; credit is given and allowed; there are checks, drafts, notes, receipts, invoices, statements, etc., to receive, to deliver, and to make record of—every phase of actual business being exemplified. The student must show at all times what he knows. There is a different set of transactions for every student. The Ellis Cabinet-Card System is used.

(8) COMMISSION AND CORPORATION SET.

One-Quarter Credit. **Five Hours, First Semester.**

Use of twenty column cash-journal account-sales register, business letters, bill of lading, commission sales book, bill and charge system, card ledger, elementary work in opening and closing corporation accounts and advanced financial statements. Text: Rowe.

(9) BANKING.

One-Quarter Credit. **Five Hours, Second Semester.**

Both cash-book and journal methods. Practical training in Bank bookkeeping and the duties of Bank officers and clerks. Clearing-house explained and practically illustrated by the handling of all business papers and commerce followed by practice in two College Banks which clear and balance cash books daily. Exchange, Loan and Collection departments are conducted. Trial balances, statements and remittances to Correspondents are made weekly and Bank Examiner reports regularly. Text: Goodyear. California Banking Laws. National Banking Act.

THIRD YEAR.

(10) COST ACCOUNTANCY.

Three-Tenths Credit. **Three Hours, First Semester.**

Illustrating shop management, voucher system, changing partnership to corporation, reserve and surplus accounts, internal checks, stock books, cost sheets and highly classified trading and financial statements. Text: Rowe.

(11) ELECTIVES.

Three-Tenths Credit. **Three Hours, Second Semester.**

Real Estate and Insurance Set, Railway, Corporation and Farm Accounting. These sets illustrate the use of insurance policies and registers, preparing and filing deeds and mortgages, leases, protesting, acknowledgments, bill of lading, abstracts of title, railway stationery, Freight Cash Book, Freight Forwarded and Received Books, telegrams, and some entirely new features in farm bookkeeping. Text: Goodyear.

(12) BOOKKEEPING AND ACCOUNTING PROBLEMS.

One-Fifth Credit. **Two Hours, Second Semester.**

Part Two—Bennett. During these periods the theory of bookkeeping is discussed in all its forms, and demonstrated by practical application. The work is prepared by the student out of class, critically examined by the instructor and returned with corrections marked.

(13) BUSINESS LAW.

One-Fifth Credit. **Two Hours, First Semester.**

Through problems and quizzes the student is made familiar with all the usual customs and business forms; with contracts, their operation and discharge, sale and bailment of goods, credit and loans, guaranty, negotiable instruments, agency, master and servant, partnerships and joint-stock companies, corporations, real and personal property. Text: Bush, Calif. Codes.

(14) AUDITING.

One-Fifth Credit. **Two Hours, One Semester.**

Work consists of experting books in Business Department, and problem work furnished by the instructor, the scope and conduct of an audit, errors of ignorance, fraud and mistake, kinds of audits, their purposes and advantages, duties and qualifications of an auditor, balance-sheet audit, the detailed audit, corporation tax law and depreciation, bank, mercantile and manufacturing audits, investigations, liabilities of auditors and directors, certified public accountant laws and examinations. Text: Montgomery.

(15) OFFICE PRACTICE AND MANAGEMENT.

One-Half Credit. **Five Hours, Two Semesters.**

Each student at some time during his course enters and conducts all of the offices, which include two banks, two wholesale houses, commission house, real estate and insurance and freight office. He learns how to use the adding machine in making statements, checking invoices and trial balances, figuring interest and summarizing. Modern methods of bookkeeping are used exemplifying columnar books, controlling accounts, trial balance proofs, loose-leaf ledgers, filing systems and billing machine. He becomes a stockholder and attends business meetings, learning parliamentary usages. Daily cash balance and reports are made, including check figures and figure trial balances. Text: Galloway.

(16) TYPEWRITING.

One Credit. **Five Hours, Two Semesters.**

The object of the instruction in typewriting is to impart a correct scientific method of fingering and a skillful, uniform touch, and to train the students in all the details of form and arrangement of transcript. The work includes business letters of all kinds, tabulated statements, articles of agreement, certificates of incorporation, the writing of a will and other legal forms. The academic credit for typewriting is not given at the end of the first year unless the student can write forty

words a minute in matter new to him. Fifty words a minute in new matter are required for credit in the second year. Texts: Typewriting by the Touch Method, Bell & Wasson; Office Training for Stenographers, Gregg.

(17) STENOTYPY.

One Credit. **Five Hours, Two Semesters.**

A course in Stenotypy lasting through both semesters is offered as an alternative for Shorthand. This new method of rapid writing, which, by the use of abbreviations and combinations of letters, allows rapid recording with little labor by means of a machine, is taught with thoroughness. Reporting.

(18) PENCIL STENOTYPY.

One-Tenth Credit. **One Hour, One Semester.**

By employing the abbreviations and rules of stenotypy rapid dictation can be taken in long hand. This course is prescribed for all students of commercial English. To obtain credit the student must be able to write seventy words a minute.

(19) INDEXING AND FILING.

One-Tenth Credit. **One Hour, One Semester.**

A thorough presentation of terminology and definitions. Types of indexes and rules for writing and filing. Rules for filing index cards and papers. Different systems, misfiling, transferring. Central filing department. Classifying and grouping records. Purchases, sales and credit records. Invoices, check and voucher filing. Filing equipment for Lawyer's office, Architect and Accountant. Text: Hudders.

(20) SHORTHAND.

The Pitmanic system of shorthand is taught, and as its value to the student is ordinarily measured by his general English education, it is recommended only to the advanced student. Credit is given only when a speed of eighty words a minute is attained. Text: Pitman-Howard.

Preparatory Department

HIGH SCHOOL OR PREPARATORY DEPARTMENT

GENERAL PROVISIONS FOR HIGH SCHOOL OR PREPARATORY DEPARTMENT.

The High School requires for graduation, after August, 1920, the following subjects:—English, two units; United States History and Civics, one unit; Laboratory science, one unit. Moreover, any curriculum followed must, in order to count for graduation, be so organized as to include two majors of at least three units each—a major consisting of three years of study in one of the following groups:—(1) English (in vocational courses, one unit of citizenship may be included with two units of English to make one major); (2) mathematics, including mechanical drawing; (3) history and social science; (4) physical and biological sciences; (5) foreign language—three or more units in one language or two units in each of two languages.

Commercial branches (twenty hours) may by special arrangement be taken after the first year of the preparatory school. This is not, however, recommended in the case of students who intend to enter University courses.

Modern Languages (five hours) may be elected during the last years of the preparatory course.

For information as to Written Work, Attendance, Examinations, Promotion, Conditions, Failures, etc., see "**General Provisions Regarding Scholarship and Standing,**" elsewhere in this catalogue.

FIRST YEAR.

(1) LATIN.

One-Half Credit. **Eight Hours, One Semester.**

Precepts: Etymology and Syntax. Text: Collier & Daniell's First Year Latin. Practice: Themes.

(2) LATIN.

One-Half Credit. **Eight Hours, One Semester.**

Precepts: Etymology and Syntax. Text: Collier & Daniell's First Year Latin. Practice: Themes in Imitation.

(3) ENGLISH.

One-Half Credit. **Five Hours, One Semester.**

Precepts: Hanson, Two Years of English Composition. Authors: Macaulay, Lays of Ancient Rome; Scott, Lady of the Lake, Ivanhoe. Practice: Weekly Composition, Exercises on alternate days.

(4) ENGLISH.

One-Half Credit. **Five Hours, One Semester.**

Hanson, Two Years of English Composition. Authors: Irving, Sketch Book; Dickens, Christmas Carol. Practice: Weekly Compositions, Exercises on alternate days.

(5) RELIGION.

One-Fifth Credit. **Two Hours, One Semester.**

Christian Doctrine. Baltimore Catechism thoroughly reviewed. Kinkead's Explanation of the Baltimore Catechism.

(6) RELIGION.

One-Fifth Credit. **Two Hours, One Semester.**

Kinkead's Explanation of the Baltimore Catechism.

(7) MATHEMATICS.

One-Half Credit. **Five Hours, One Semester.**

Algebra. Text: Hawkes, Luby and Touton, First Course.

(8) MATHEMATICS.

One-Half Credit. **Five Hours, One Semester.**

Algebra. Text: Hawkes, Luby and Touton, First Course.

(9) HISTORY.

One-Half Credit. **Five Hours, One Semester.**

The Ancient Nations, and Greece. Text: Betten's Ancient History.

(10) HISTORY.

One-Half Credit. Five Hours, One Semester.

Roman History to Charlemagne. Text: Betten's Ancient History.

SECOND YEAR.

(11) LATIN.

One-Half Credit. Eight Hours, One Semester.

Precepts: Etymology and Syntax reviewed in analysis work. Bennett's Latin Grammar. Author: Caesar, Gallic War, two books; Gunnison & Harley's Edition. Practice: Themes in Imitation.

(12) LATIN.

One-Half Credit. Eight Hours, One Semester.

Precepts: Syntax reviewed in analysis work, concluded. Bennett's Latin Grammar. Author: Caesar, Gallic War, two books; Gunnison & Harley's Edition. Practice: Themes in Imitation.

(13) ENGLISH.

One-Half Credit. Five Hours, One Semester.

Precepts: Donnelly's Imitation and Analysis. Hanson Two Years of English Composition, 2nd half. Authors: Longfellow, Whittier, Holmes, Lowell, Stevenson, Treasure Island. Practice: One Composition, three Exercises weekly.

(14) ENGLISH.

One-Half Credit. Five Hours, One Semester.

Precepts: Donnelly's Imitation and Analysis. Authors: Shakespeare, Julius Caesar; Cooper, The Spy; Parkman, Oregon Trail. Practice: One Composition, three Exercises weekly.

(15) RELIGION.

One-Fifth Credit. Two Hours, One Semester.

Christian Doctrine. Text: Kinkead's Explanation of the Baltimore Cathechism, second half.

(16) RELIGION.

One-Fifth Credit. Two Hours, One Semester.

Christian Doctrine. Text: Deharbe, Complete Catechism of the Christian Religion, Part II.

(17) MATHEMATICS.

One-Half Credit. Five Hours, One Semester.

Plane Geometry. Text: Wentworth-Smith, Plane Geometry.

(18) MATHEMATICS.

One-Half Credit. Five Hours, One Semester.

Plane Geometry. Text: Wentworth-Smith, Plane Geometry.

(19) HISTORY.

One-Half Credit. Five Hours, One Semester.

Medieval History. Betten and Kaufmann's Modern History.

(20) HISTORY.

One-Half Credit. Five Hours, One Semester.

Modern History. Text: Betten and Kaufmann's Modern History.

THIRD YEAR.

(21) LATIN.

One-Half Credit. Eight Hours, One Semester.

Precepts: Syntax. Bennett's Latin Grammar. Author: Cicero, first three orations against Catiline. Practice: Themes in Imitation.

(22) LATIN.

One-Half Credit. Eight Hours, One Semester.

Precepts: Syntax. Bennett's Latin Grammar. Author: Cicero's Fourth Oration against Catiline, the orations Pro Archia and Pro Marcello. Practice: Themes in Imitation. Original Exercises.

(23) **ENGLISH.**

One-Half Credit. **Five Hours, One Semester.**

Precepts: Text: Blaisdell, Composition Rhetoric. Authors: Gray, Poems; Coleridge, Ancient Mariner; Arnold, Sohrab and Rustum. Practice: One Composition, three Exercices weekly.

(24) **ENGLISH.**

One-Half Credit. **Five Hours, One Semester.**

Precepts: Text: Blaisdell, Composition Rhetoric. Authors: Shakespeare, Merchant of Venice. Hughes, Tom Brown's School Days; Lincoln's Speeches. Practice: One Composition, three Exercises weekly.

(25) **RELIGION.**

One-Fifth Credit. **Two Hours, One Semester.**

Christian Doctrine. Text: Deharbe, Complete Catechism of Christian Religion, Part III.

(26) **RELIGION.**

One-Fifth Credit. **Two Hours, One Semester.**

Christian Doctrine. Text: Deharbe, Complete Catechism of Christian Religion, Part I.

(27) **MATHEMATICS.**

One-Half Credit. **Five Hours, One Semester.**

Algebra to Quadratics reviewed. Text: Hawkes, Luby & Touton, Second Course.

(28) **MATHEMATICS.**

One-Half Credit. **Five Hours, One Semester.**

Algebra from Quadratics to end. Text: Hawkes, Luby and Touton, Second Course.

(29) **HISTORY.**

One-Half Credit. **Five Hours, One Semester.**

History of England. Text: Cheyney, Short History of England.

(30) HISTORY.

One-Half Credit. Five Hours, One Semester.

History of England. Text: Cheyney, Short History of England.

(31) GREEK.

One-Half Credit. Five Hours, One Semester.

Precepts: Etymology and Syntax. Text: White's First Greek Book. Practice: Daily Themes.

(32) GREEK.

One-Half Credit. Five Hours, One Semester.

Precepts: Etymology and Syntax. Text: White's First Greek Book. Xenophon's Anabasis, two books; Lucian's Dialogues. Practice: Translations of sentences based on the authors are handed in daily.

FOURTH YEAR.

(33) LATIN.

One-Half Credit. Five Hours, One Semester.

Precepts: Syntax. Authors: Cicero, De Senectute. Virgil, Three Books. Practice: Themes in Imitation. Original Exercises. Baker & Inglis Latin Composition. Easy Latin Conversation.

(34) LATIN.

One-Half Credit. Five Hours, One Semester.

Precepts: Prosody. Authors: Cicero, Narrations, Virgil, Three Books. Practice: Themes in Imitation. Original Exercises. Baker & Inglis Latin Prose Composition. Easy Latin Conversation.

(35) ENGLISH.

Precepts: Text: Canby & Opdycke. Authors; Macaulay, Johnson and Goldsmith; Tennyson, Idyls of the King. Practice: One Composition, three Exercises weekly.

(36) ENGLISH.

One-Half Credit. Five Hours, One Semester.

Precepts: Text: Canby & Opdycke. Authors: Dickens, A

Tale of Two Cities; Shakespeare's Richard II; Browning, Cavalier Tunes. Practice: Composition. Exercises in simpler forms of verse.

(37) RELIGION.

One-Fifth Credit. Two Hours, One Semester.

Christian Doctrine. Text: Gibbons, Faith of Our Fathers, first half.

(38) RELIGION.

One-Fifth Credit. Two Hours, One Semester.

Christian Doctrine. Text: Gibbons, Faith of Our Fathers, second half.

(39) MATHEMATICS.

One-Half Credit. Five Hours, One Semester.

Soild Geometry. Text: Wentworth-Smith Solid Geometry.

(40) MATHEMATICS.

One-Half Credit. Five Hours, One Semester.

Plane Trigonometry. Text: Wentworth, Plane Trigonometry.

(41) HISTORY.

One-Half Credit. Five Hours, One Semester.

History of the United States. Text: Muzzey, American History.

(42) CIVIL GOVERNMENT.

One-Half Credit. Five Hours, One Semester.

The Government of the village, town and city. Activities and duties of the citizen. The State and Federal Governments. Text: Ashley's New Civics.

(43) PHYSICS.

One-Half Credit. Five Hours, One Semester.

A course in elementary Physics with copious laboratory experiments. Text: Milliken & Gale, First Course in Physics. Milliken & Gale, Laboratory Course in Physics.

(44) PHYSICS.

One-Half Credit. Five Hours, One Semester.

A continuation and completion of Elementary Physics. Text: Milliken & Gale, First Course in Physics. Milliken & Gale, Laboratory Course in Physics.

(45) GREEK.

One-Half Credit. Five Hours, One Semester.

Review of Etymology and Syntax: White's Beginner's Greek Book. Author: Homer, The First and Second Book of the Iliad. Practice: Exercise in translating from English into Greek.

(46) GREEK.

One-Half Credit. Five Hours, One Semester.

Etymology and Syntax. Text: White's Beginner's Greek Book. Author: Homer, The Fifth and Sixth Books of the Iliad. Practice: Exercises in translating from English into Greek.

HIGH SCHOOL OR PREPARATORY DEPARTMENT

FIRST YEAR		SECOND YEAR		THIRD YEAR		FOURTH YEAR	
Subject	Hrs.	Subject	Hrs.	Subject	Hrs.	Subject	Hrs.
Latin	8	Latin	8	Latin	8	Latin	5
English	5	English	5	English	5	English	5
Religion	2	Religion	2	Religion	2	Religion	2
Algebra, 1st year	5	Plane Geometry	5	Algebra, 2d year	5	Solid Geometry 1st sem.	5
Ancient History	5	Modern and Medieval History	5	History of England	5	Plane Trigonometry 2d sem.	5
		°Commerc'l Subjects	10	°Greek	5	°Greek	5
				°Modern Language	5	Civics, 1st sem.	5
				°Commerc'l Subjects	10	History of U. S. 2d sem.	5
						†Physics	5
						°Mod. Language	5
						°Commerc'l Subjects	10

† Prerequisite for Engineering Courses.

° Elective.

University Events

UNIVERSITY EVENTS

FIRST DRAMATIC ART CONTEST

Prize: Valuable gold watch and chain.

Tuesday evening, March 18, 1921.

PROGRAM

Overture ..... University Orchestra

Introductory by the President .....Rev. T. L. Murphy, S. J.

1. Lasca (Despies). A love-tale of a Texas ranger told in a Montana inn.

   The Ranger .....Lloyd Benedict Nolan, 4th Year High
   Innkeeper.....John De Busman Haley, 3rd Year High
   Half-breed .....George Leo Malley, 3rd Year High
   Cowboys .....Byron Latham Haviside, 2nd Year High
   Fred Ernest Florimont, 4th Year High

2. The Miser (Osborn). The scene opens with the miser's entrance through the attic trapdoor of an old Venetian rookery, about the year 1850.

Impersonated by .....Leslie J. Smith, '24

Music .....University Orchestra

3. Act IV. Scene 1, King John (Shakespeare). A room in the castle. King John having seized the throne of his young nephew Arthur, finds the boy Prince "a very serpent in his way." He has, therefore, drawn Hubert De Burgh into a promise to burn out the eyes of the rightful Prince. The selection opens with Hubert's appearance to carry out his promise.

   Hubert De Burgh .....Victor James Martin, 1st Year High
   Prince Arthur.....John Joseph Flynn, 1st Year High
   Attendants .....Charles William Andrews,
   Jay Knobloch Montgomery

4. The Tell-Tale Heart (Poe). A murderer haunted by his crime, is driven to confess it. He is under the im-

pression that the police have already found him out. A detective hears the confession and the officers enter and arrest the murderer.

Played by Michael Cornelius Dunne, '24, assisted by Arthur James Saxe, '24, George Walter Ryan, '24, and Ernest Delmo Bedolla, '24.

Music

5. The Soul of the Violin. A soliloquy of a starving musician, who succumbs to the pangs of hunger rather than sell his beloved violin.

Recited by Emmett Charles Daly, '23.

6. Rosa. An Italian laborer's story to a florist on a Street of Quebec.

Petro, the poor laborer .....Charles Richard Boden, '23
Florist .....Frank Paul Giambastini, 3rd Year High
Purchaser .....James Cavanaugh Glynn, 3rd Year High
Newsboy .....Guy Andre De Luze, 1st Year High

Music.

7. The Murderer's Dream in his death cell on the eve of his execution.

By Michael Joseph Pecarovich, '22

8. Quarrel scene from Julius Caesar, outside the tent of Brutus near Sardis.

Brutus .....Thomas Joseph Ford, '21
Casius .....John May Burnett, 4th Year High

Music.

The following gentlemen kindly acted as Judges:

Mr. James Beatty Mr. Clay M. Greene
Mr. John J. Barrett
Mr. Richard Hotaling Mr. Clarence Urmy

The decision of the Judges was announced by Mr. Clay M. Greene. The prize was won by Lloyd Benedict Nolan. Charles E. Daly, Charles R. Boden, Michael J. Pecarovich were honorably mentioned.

Postlude.

The Music was rendered by the University Orchestra under the leadership of Prof. Samuel Mustol

The stage was under the personal direction of Rev. George G. Fox, S. J., assisted by members of the Engineering Society of the University of Santa Clara.

INTERCOLLEGIATE DEBATE

UNIVERSITY OF SOUTHERN CALIFORNIA

vs.

UNIVERSITY OF SANTA CLARA

TUESDAY, MARCH 15TH, 1921

Overture—Operatic Mingle .....Berry
University Orchestra

Introductory .....Hon. Frederick Brown, Chairman

Interlude—Spring Blossoms .....Loring
University Orchestra

Question:

Resolved: That the candidates for the Presidency of the United States should be selected by a national system of direct primaries.

Affirmative—University of Santa Clara.
Mr. Randall O. O'Neill
Mr. Peter F. Morrettini
Mr. James B. O'Connor

Negative—University of Southern California.
Mr. Roland W. Maxwell
Mr. Paul H. Bruns
Mr. Louis F. D'Elia

Decision of the Judges—
The following gentlemen kindly consented to act as Judges:
Hon. Frank H. Kerrigan
Hon. Pearly F. Gosbey
Hon. J. R. Welch
And awarded the debate to the University of Santa Clara.

Exit March—American Spirit .....Huff
University Orchestra

ANNUAL CONTESTS IN PUBLIC SPEAKING

For the Owl and Junior Prizes

TUESDAY, APRIL 5TH, 1921

Overture ..... University Orchestra
Introductory ..... Lloyd B. Nolan, 4th High

JUNIOR ELOCUTION CONTEST

Poor Little Joe (Arkwright) ..... Louis J. deLuze, 1st High
Jean Deprez (Service) ..... Earl J. Twomey, 1st High
The Old Man and Jim (Riley) ..... Francis E. Cotter, 2nd High
The Level Crossing ..... Albert D. Halloran, 3rd High
Music ..... University Orchestra
Smiting the Rock ..... Joseph A. Sheehan, 3rd High
Incentive to Patriotism (Burrill) ..... John M. Burnett, 4th High
Song of the Market Place ..... Russell H. Haviside, 4th High
The Lost Word (Van Dyke) ..... Henry B. Martin, Jr., 4th High
Music ..... University Orchestra

COLLEGE ORATORICAL CONTEST

(Original Compositions)

Lest We Forget ..... Joseph E. Becker, '24
Smith-Towner Bill ..... John P. Dempsey, '24
Music ..... University Orchestra
Excessive Indemnity ..... Henry M. Robidoux, '24
Ireland for the Irish ..... Francis J. O'Shea, '22
Music ..... University Orchestra
Anouncement of the decision of the Judges by Hon Edward P. Shorthall
Postlude ..... University Orchestra

The following gentlemen kindly consented to act as udges:

Hon. Charles A. Thompson — Hon. Edward P. Shortall
Hon. Daniel C. Deasy — Hon. E. K. Johnston
Prof. Raymond B. Leland

The Owl Prize was won by John P. Dempsey, '24 and the Junior Prizes by Albert D. Halloran and Louis deLeuze.

INAUGURATION OF KEVIN BARRY BRANCH NO. 155

American Association for the Recognition of the Irish Republic

TUESDAY, APRIL 8TH, 1921

Overture—Irish Popular Airs ..... University Orchestra
Introduction ..... Rev. T. L. Murphy, S. J.

"WE OURSELVES"

A Drama of the Present Time Among the Hills of Tara

Act I—A Cobbler's Shop.
Act. II—The Same.
Act III—The Hills of Tara.

Jerry O'Callaghan ..... Charles E. Daly, '23
Larry Ryan ..... Arthur J. Saxe, '24
Myles O'Malia ..... James B. Comer, '24
Paddy Nolan ..... Michael C. Dunne, '24
Jack Riley ..... Francis E. Smith, '24
Sergeant Bullman, R. I. C. ..... George W. Ryan, '24
Constable O'Connell, R. I. C. ..... John M. Jackson, '24
Tommy McDonald ..... Robert E. Shields, '24
Mickey Dolan ..... Delwin A. Brunetti, '24

The Irish Volunteer Army

Floyd J. Regan, '24
Francis J. O'Shea, '22
Lewis W. Lettunich, '24
Edwin E. Driscoll, '24
Robert L. Driscoll, 24
John P. Dempsey, '24
John B. O'Brien, '24
Harold P. Maloney, '23
Raymond E. McCauley, '24
Henry M. Robidoux, '24
John M. Murphy, '24
Michael C. Dunne, '24
Francis E. Smith, '24
Arthur J. Saxe, '24
Charles E. Daly, '23
James B. Comer, '24

Irish Medley ..... University Orchestra
America's Obligation ..... George A. Nicholson, '16
Star Spangled Banner ..... Student Body
The Declaration of Independence ..... James B. O'Connor, '20
Santa Clara and Ireland ..... Charles R. Boden, '23

CONFERRING OF CERTIFICATES

Soldiers of Erin ..... The Student Body

"The Cause" .....Rev. P. C. Yorke
Anthem .....The Student Body
Exit March—The Irish Republic .....University Orchestra

RYLAND DEBATE

TUESDAY, APRIL 26, 1921

PROGRAM

Overture—The Golden Sceptre .....Grell
University Orchestra

Introductory .....Mr. Owen D. Richardson

Question:

Resolved: "That the Legislature of the State of California was justified in Passing the King Corporation Tax Bill."

Affirmative—Senator Thomas A. Sperry
Senator Thomas Crowe
Senator Michael J. Pecarovich

Negative—Representative Francis J. O'Shea
Representative James B. Comer
Representative Charles E. Daly

Waltz—Flowers of the Wildwood.....Skaggs
University Orchestar

DECISION OF THE JUDGES

The following gentlemen kindly consented to act as judges:
Dean C. C. Coolidge

Mr. Frank H. Bloomingdale Dean G. L. Sullivan
Mr. Nicholas Bowden Dr. Fred C. Gerlach

And awarded the debate to the Negative.

March—Paean of Triumph .....Esberger
University Orchestra

SEVENTIETH ANNUAL COMMENCEMENT

SATURDAY AFTERNOON, MAY 28, 1921

At 2 O'clock

PROGRAM

Overture—Poet and Peasant ..... Suppe

University Orchestra

Award of Prizes

Conferring of Degrees

Organ Echoes ..... Hayes

University Orchestra

Address ..... James P. Sex, Ph. D., J. D.

Valedictory ..... Thomas Joseph Ford

March—Joyful Greeting ..... Littleton

University Orchestra

LECTURES, 1920-21

Sept. 7.—Mr. P. J. Haltigan, Reader of the House of Representatives, "Washington, Our National Capital."

Nov. 30—Mr. J. A. Kinkead, Consulting Engineer, San Francisco, "The Manufacture of Steel."

Dec. 11—Mr. A. J. Cleary, Assistant City Engineer, San Francisco, "Some Problems of the Engineer."

Dec. 14—Mr. James A. Flaherty, Supreme Knight of the Knights of Columbus, "The Knights of Columbus."

Feb. 15—Mr. David Goldstein, "Bolshevism and Its Remedy."

Mar. 7—Mr. Stoddard, Advising Engineer, The Heine Steam Boiler Company, Phoenixville, Pa., "The Manufacture of the Heine Boiler."

Apr. 9—Mr. Robert Shruman, Sales Manager of the Byron Jackson Pump Company, "Pumping Plants".

Apr. 15—Mr. W. C. Smith, Transformer Engineer of the General Electric Company, "Transformers."

Apr. 22—Mr. Robert K. Barrows, "Our Neighbor, Chili".

DEGREES CONFERRED

Bachelor of Laws

DEMETRIO DIAZ*
WILLIAM WARD SULLIVAN

Bachelor of Arts

EDMUND ZAN COMAN
RICHARD IGNATIUS M'CARTHY

Bachelor of Science

CASIMIR ANDREW ANTONIOLI
HAROLD JOHN CASHIN Cum magna laude
JOHN WILFRED MURPHY

Mechanical Engineer

IMANUEL ALVIN OLIVER

Bachelor of Science in Civil Engineering

ALFRED JOSEPH ABRAHAMSEN
WILLIAM GASPAR DE KOCH
THOMAS JOSEPH FORD
ROY WILBUR FOWLER
DANIEL JOSEPH MINAHAN

Bachelor of Science in Electrical Engineering

WILLIAM HENRY OSTERLE Cum laude

Bachelor of Science in Mechanical Engineering

ADOLFO VERAGA Y RODRIGUEZ Cum laude

The Commercial Certificate

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FREDERICK ERNEST FLORIMONT
LEWIS WASHINGTON LETTUNICH

*Graduated February 1st, 1921

EXTRAORDINARY PRIZES

THE SENIOR NOBILI MEDAL

An annual medal of the value of Sixty Dollars, founded in 1876, by Joseph A. Donohoe, Esq., of San Franisco, in honor of the First President of Santa Clara, the Rev. John Nobili, S. J., to be given to "the student who shall be deemed first in morals, obedience, and application to study," was awarded to

HAROLD JOHN CASHIN

Next in Merit:

JOHN FRANCIS O'SHEA

Distinguished:

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Adolfo Vergara
Edmund Joseph Kenney
John Francis Fiorino
George Louis Haneberg
John Thomas Lewis
Harold Philip Maloney
William Gaspar de Koch
Enrique Linares, Jr.
Rodolfo Florencio Herbruger

THE JUNIOR NOBILI MEDAL

An annual medal of the value of Thirty-five Dollars, founded by Michael H. Kelly, Esq., of San Francisco, to be given to the "student in the junior division who shall be deemed first in morals, obedience, and application to study," was awarded to

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Henry Puaena Sylva
Saied Nassif Karam
Isaac Heslop Whitfield
Edwin Albert Jauregui
Frank Paul Giambastiani

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To be given to the most distinguished of the

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Leo James Friedburger
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Cornelius Chester Noble
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Henry Ewin Baker
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William Francis Weston
Stuart Charles McLoughlin
George Aloysius Martinelli
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THE ARCHBISHOP'S MEDAL

An annual medal of the value of Fifty Dollars, gift of His Grace, Most Rev. Edward J. Hanna, D. D., Archbishop of San Francisco, in memory of his illustrious predecessor, Most Rev. Patrick William Riordan, D. D., "for the best examination in Christian Doctrine," was awarded to

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Next in Merit:

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THE RYLAND PRIZES

Annual prizes of Fifty Dollars, Twenty-five Dollars and Fiften Dollars, founded in 1897 by the Hon. Caius T. Ryland of San Jose, and increased by his son John Wallace Ryland, Esq., B. S. '77, LL.B. '12, to be given "to the student who may be deemed by the University most fit for the prize", have been set aside for the students who shall be judged to have distinguished themselves most in the Ryland Annual Debate between the Philalethic Senate and the House of Philhistorians, and were awarded as follows:

First Prize, Fifty Dollars
CHARLES EMMET DALY

Second Prize, Twenty-Five Dollars
JOHN FRANCIS O'SHEA

Third Prize, Fifteen Dollars
JAMES BERNARD COMER

Distinguished:

Thomas Crowe
Michael Joseph Pecarovich
Thomas Alexander Sperry

THE BARCHI PRIZES

Annual prizes of Fifteen Dollars and Ten Dollars, founded by Joseph M. Durney, Esq., of San Francisco, in honor of the Rev. Caesar A. Barchi, S. J., were given this year for the best paper in the Mathematical Contest and were awarded to

First Prize, Fifteen Dollars
ENRIQUE LINARES, JR.

Second Prize, Ten Dollars

RODOLFO FLORENCIO HERBURGER

Distinguished:

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A prize of Twenty-five Dollars offered by Mrs. Walter L. Dean to be given for the best papers in the High School Mathematical Contest, were awarded to

First Prize, Fifteen Dollars

ALBERT JOHN STEISS, JR.

Second Prize, Ten Dollars

WILLIAM PETER WALKER

Worthy of Special Mention

FRED ALOYSIUS BRIZZOLARA, JR.

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THE OWL PRIZE

An annual prize of Twenty-five Dollars, founded by the directors of the former University Magazine, "The Owl", to be given to the winner of the Annual Oratorical Contest in the University course, was awarded to

JOHN PATRICK DEMPSEY

Distinguished:

Henry Moise Robidoux Joseph Ernest Becker
Francis John O'Shea

THE JUNIOR ELOCUTION PRIZES

Annual prizes of Fifteen Dollars and Ten Dollars for the

winners of the Elocution Contest in the High School Department, were awarded as follows:

First Prize, Fifteen Dollars
ALBERT DONALD HALLORAN

Second Prize, Ten Dollars
LOUIS JOSEPH DE LEUZE

Worthy of Special Mention
JOHN MAY BURNETT

Distinguished:
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THE DONAHUE PRIZES

Annual prizes of Twenty-five Dollars, Fifteen Dollars and Ten Dollars, founded in 1883 by Peter Donahue, Esq., of San Francisco, to be awarded to the students who shall show the greatest progress in the study of Latin and Greek during the session, were set aside this year for the best Latin composition and were awarded as follows:

First Prize, Twenty-Five Dollars
JOHN MAY BURNETT

Second Prize, Fifteen Dollars
ROBERT PAUL O'BRIEN

Third Prize, Ten Dollars
JOHN MATTHEW MURPHY

Distinguished:
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THE ORELLA MEDAL

A medal of the value of Twenty-five Dollars, offered by Dr.

Firmin R. Orella, B. S. '89, to be given to the writer of the best paper on a scientific subject, was awarded to

RODOLFO FLORENCIO HERBURGER

Distinguished

John Matthew Murphy — Fortunate Emile Greco
Harold Philip Maloney — Austin Kellogg Enright

THE REDWOOD PRIZES

Annual prizes of Fifteen Dollars and Ten Dollars, founded in 1908 by the executive committee of "The Redwood", and given for the best essay on a historical subject, were awarded as follows:

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and
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Annual prizes of Fiften Dollars and Ten Dollars, founded in 1894 in memory of Daniel J. McCann, B. S. '84, were set aside this year for the best short story, and were awarded as follows:

First Prize, Fifteen Dollars
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Second Prize, Ten Dollars
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THE DRAMATIC ART PRIZES

A gold watch and chain of the value of Two Hundred Dol-

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The President and Board of Trustees gratefully express their thanks for the following gifts:

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To Mr. Paul Lohse, who, through the Rev. Henry Brainard, S. J., presented to the University Library twenty English, French and German books.

To Miss Margaret A. Farney, for her gifts to the University Library.

To Mrs. Thomas J. Ford, Miss Mary Elizabeth Bukcley and Miss Anna Agnes Buckley, for their gifts to the Students' Library.

To Mr. John Eberhard, for his gift of a gold nugget to the Mineralogical collection, and an old coin to the General Museum.

To Mr. George E. Truman, for his gift, a specimen of calcosite, to the Mineralogical collection.

To Mrs. Walter L. Dean, for her gift of twenty-five dollars for the Dean prizes.

To Mr. J. S. Cullen for a number of mineralogical specimens, among them several excellent specimens of tourmaline.

To two friends who wish to remain unknown, for their gifts of two gold watches and chains, each prize of the value of two hundred dollars, to be competed for in the annual Dramatic Art Contest.

To Mr. John C. Martin and Mr. John E. Becker, '24, for their gifts to the Mineralogical collection.

To Mrs. Martha Duffill, Mr. Robert J. Fatjo, Mr. William

McCormick, Mr. A. W. Nuttman, the Misses Downing and Mr. Paul Maggi for their gifts of the cups contested for on President's Day.

In Memory of Mr. John J. Kelly who, through the Reverend William M. Boland, S. J., has founded the prizes to be known as the Kelly Prizes by his bequest of five hundred dollars.

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742 Monroe St.,
Santa Clara.

Fernandez, J. R., Span.,
1189 Harrison St.,
Santa Clara.

Gerlach, F. C., M. D.,
University Physician,
Letitia Bldg.,
San Jose.

Harmon, R. E., Letters,
University,
Santa Clara.

Jones. J. J., Law,
873 Benton St.,
Santa Clara.

Lecat, Henri, French,
Mountain View.

Lotz, W. D., Engr.,
875 Washington St.,
Santa Clara.

Mustol, S. J., Mus.,
1451 Lexington St.,
Santa Clara.

Richards, Hon. J. E., Law,
338 S. 10th St.,
San Jose.

Richardson, O. D., Law,
335 S. 13th St.,
San Jose.

Sex, J. P., Law,
231 Park Ave.,
San Jose.

Sullivan, B. R., Coml.,
1068 Madison St.,
Santa Clara.

Sullivan, G. L., Engr.,
725 Madison St.,
Santa Clara.

Register of Students

REGISTER OF ALL STUDENTS

Arch.—Architecture.
Coml.—Commercial, taking one or more commercial subjects.
Engr.—College of Engineering.
Ext.—Extern, living outside the University.
Fresh.—Freshman.
Jr.—Junior.
Let.—Letters, College of Philosophy and Letters, or College of General Science.
Pre-Med.—Pre-Medical.
Res.—Resident, living within the University.
Soph.—Sophomore.
Spec.—Special, not in regular course.
Sr.—Senior.

Abrahamsen, Alfred Joseph	Sr. Engr.	Res.	San Francisco
Abrahamsen, Gunlek Olavus	Fresh. Engr.	Res.	San Francisco
Ackel, Alexander Simeon	3 High	Res.	Phoenix, Ariz.
Aiello, Peter Francis	3 High Coml.	Ext.	San Jose
Alexander, David Edgar	1 High	Res.	Bakersfield
Anderson, Louis Loring	Fresh. Let.	Res.	Martinez
Anderson, Walter Alden	1 High Coml.	Res.	Alvarado
Anderson, William Christian	2 High	Res.	Alvarado
Andrews, Charles William	1 High	Ext.	Palo Alto
Antonacci, Michael Henry	Fresh. Engr.	Ext.	San Jose
Antonioli, Casimir Andrew	Sr. Let. 2 Law	Ext.	Mountain View
Argenti, Tullio Anthony	Jr. Let. 1 Law	Res.	San Francisco
Bailey, Thomas George	1 High	Res.	San Francisco
Baker, Henry Ewin	Soph. Engr.	Res.	Monrovia
Baker, Roy Marion	Spec. Fresh. Let.	Res.	Long Beach
Bannan, Thomas Joseph	Soph. Engr.	Res.	San Francisco

Barrett, John Joseph	2 High	Res.	San Francisco
Battle, Martin Patrick	Fresh. Let.	Ext.	Santa Clara
Bean, Paul Dows	Fresh. Let.	Ext.	San Jose
Becker, Joseph Ernest	Fresh. Engr.	Res.	Colton, Wash.
Bedolla, Ernest Delmo	Fresh. Let.	Res.	Gonzales
Berg, Kenneth Herman	Jr. Engr.	Res.	Marysville
Bernal, Cornelius Anthony	2 High	Res.	San Juan Bautista
Bertaccini, John Dino	3 High Coml.	Ext.	Santa Clara
Boden, Charles Richard	Soph. Let.	Res.	San Francisco
Boivin, Henry Athol	4 High	Ext.	Santa Clara
Bonetti, Julian Bertram	3 High	Res.	San Francisco
Boyes, Joseph Harold.	3 High	Ext.	San Jose
Brazil, John Michael	2 High Coml.	Ext.	Lawrence
Brescia, Everett William	3 High	Res.	La Grange
Britton, Jerome Daniel	1 High	Res.	Santa Barbara
Brizzolara, Fred Aloysius, Jr.	4 High	Ext.	Santa Margarita
Brock, Philip Elwood	1 High	Res.	Sacramento
Brown, Everett Claude	4 High	Res.	Los Angeles
Brown, Gordon Joseph	2 High	Res.	Los Angeles
Brown, John Doran	2 High	Res.	Los Angeles
Brunetti, Delwin Augustus	Fresh. Let.	Res.	King City
Buckley, Daniel John	3 High	Res.	San Francisco
Burke, Roger	1 High	Res.	San Francisco
Burnett, John May	4 High	Ext.	San Jose
Burns, George Timothy	4 High	Res.	Wray, Colo.
Bush, Bernard Joseph	1 High	Res.	San Francisco
Butler, Thomas Kingwell	2 High	Res.	San Francisco
Byrne, Joseph James	Jr. Engr.	Ext.	Butte, Mont.
Callan, Emmett Francis	2 High	Res.	San Francisco
Canepa, Frank Michael	1 High	Res.	San Jose
Carey, George Edward	Fresh. Let.	Ext.	Palo Alto
Carnahan, John Thomas	Spec. Let.	Res.	Spokane, Wash.
Carney, Ignatius John	4 High	Res.	San Francisco
Carreno, Frank Perez	1 High	Res.	Nogales, Ariz.
Carroll, John Joseph	Fresh. Let.	Res.	Butte, Mont.
Carroll, John Mervyn	4 High	Res.	Mayhew
Carson, Ralph Andrew	2 High	Res.	Milpitas

Carter, Norbet Henry	2 High	Res.	Lodi
Cashin, Harold John	Sr. Let. 2 Law	Res.	Los Angeles
Cassin, Charles Michael	Jr. Let. 1 Law	Ext.	San Jose
Cavanaugh, William Martin	2 High	Res.	Niles
Cerruti, Leland George	Fresh. Let.	Ext.	San Jose
Clarke, Donald William	Fresh. Let.	Res.	Bellingham, Wh.
Clothier, Francis Anthony	1 High	Res.	Menlo Park
Cochrane, Harold Alphonsus	Spec. Soph. Let.	Res.	Kent, Wash.
Collins, George Matthew	4 High	Res.	San Mateo
Coman, Edmund Zan	Sr. Let. 2 Law	Res.	Spokane, Wash.
Comer, James Bernard	Fresh. Let.	Res.	Los Angeles
Comyns, Thomas Francis, Jr.	4 High	Res.	San Francisco
Connell, John Howard	Jr. Let. 1 Law	Res.	Seattle, Wash.
Conners, James Michael	Soph. Let.	Ext.	Santa Clara
Connolly, George Aloysius	1 High	Res.	San Francisco
Cotter, Edward Francis	2 High	Res.	Oakland
Coughlan, John Bernard	Jr. Engr.	Res.	Tracy
Coules, James Kingsley	1 High	Res.	Los Angeles
Crowe, Thomas	Jr. Let. 1 Law	Res.	Tulare
Crowley, Dennis Clifford	Fresh. Let.	Res.	Butte, Mont.
Crutchett, William Lawrence	2 High	Res.	San Francisco
Cullen, Cornelius Joseph	1 High	Res.	Redwood City
Culleton, Gerald Richard	Fresh. Let.	Res.	Fresno
Cunningham, Jeremiah Falvey	2 High	Res.	Boulder Creek
Daily, George Maurice	1 High	Res.	Hollister
Daly, Charles Emmett	Soph. Let.	Ext.	Santa Clara
Daly, Charles Francis	Fresh. Let.	Res.	Eureka
Daly, James Vincent	3 High	Ext.	Santa Clara
Day, Carroll Eugene	2 High	Ext.	Santa Clara
Dean, Walter Edwin	3 High	Res.	San Francisco
de Cazotte, Michel Marie	Soph. Engr.	Res.	San Mateo
de Koch, Gaspar William	Sr. Engr.	Res.	Los Angeles
De Leuze, Guy Andre	1 High	Res.	Oakland
De Leuze, Louis Joseph	1 High	Res.	Oakland
Del Mutolo, Marsino Gaspero	4 High	Res.	Swanton
Demartini, Walter Albert	2 High	Res.	San Francisco
Dempsey, John Patrick	Fresh. Let.	Ext.	San Jose

Diaz, Demetrio	3 Law	Res.	Tampico, Mex.
Di Fiore, Leopold Pasquale	Spec. Engr.	Ext.	San Jose
Doyle, Charles Stanley	4 High	Res.	Sacramento
Driscoll, Edwin Ephraim	Fresh. Let.	Res.	Klamath Falls, Ore.
Driscoll, Robert Leo	Fresh. Let.	Res.	Watsonville
Duff, Robert Alexander	Fresh. Engr.	Res.	Medford, Ore.
Duffill, Albert Joseph	4 High	Ext.	Santa Clara
Dunne, Michael Cornelius	Fresh. Let.	Ext.	San Jose
Echave, Martin	1 High	Res.	McDermott, Nev.
Egan, Joseph Owens	1 High	Res.	Alameda
English, Richard Canisius	1 High	Res.	Portland, Ore.
Enright, Austin Kellogg	Soph. Engr.	Ext.	Santa Clara
Escaip, Alfred Ramon	2 High	Res.	Chihuahua City, Mex.
Evans, Francis Howard	Fresh. Let.	Res.	Long Beach
Farley, Niall Patrick	4 High	Res.	Prescott, Ariz.
Fassett, Weymouth Odion	2 High	Res.	Alderpoint
Fatjo, Paul Luis	2 High	Res.	San Jose
Fawke, Philip Guy	Spec. 4 High	Res.	San Francisco
Fellows, Edward Martin	Spec. 1 Law	Ext.	Santa Clara
Ferrario, Alfredo Antonio	Jr. Engr.	Res.	Los Angeles
Ferrario, Raymond Anthony	4 High	Res.	Livermore
Fields, Joaquin Lawrence	Spec. 1 Law	Ext.	Niles
Fiorino, John Francis	Soph. Let.	Res.	Tacoma, Wash.
Fitzpatrick, Joseph Robert	Jr. 1 Law	Ext.	Redwood City
Flaherty, Richard Thomas	Soph. Let.	Res.	Spokane, Wash.
Fletcher, George Edward	2 High	Ext.	San Jose
Florimont, Fred Ernest	4 High	Res.	Oroville
Flynn, John Joseph	2 High	Res.	Palo Alto
Flynn, Thomas Joseph	3 High	Res.	San Fernando
Ford, Edward Raymond	2 High	Res.	Needles
Ford, James Eugene	Fresh. Let. Coml.	Res.	Calistoga
Ford, Thomas Joseph	Sr. Engr.	Ext.	San Jose
Forge, Otis Francis	Soph. Engr.	Ext.	Santa Clara
Forster, John Ferdinand	4 High	Res.	Los Angeles
Fowler, Roy Wilbur	Sr. Engr.	Ext.	San Jose

Freeman, Edgar James	1 High	Res.	Albuquerque, N. M.
Friedberger, Leo Peter	Fresh. Let. Coml.	Res.	Madera
Friedman, Jerome Mervin	2 High	Ext.	San Jose
Fuller, Thomas Reid	1 High	Res.	Manteca
Garcia, Lewis Cyril	1 High	Ext.	San Jose
Gardiner, Robert Joseph	Soph. Engr.	Ext.	San Jose
Genochio, Albert John	2 High	Ext.	Redwood City
Geoffroy, Joseph Theodore	Soph. Let.	Ext.	San Jose
Geoghegan, George Washington	3 High	Res.	Salt Lake City, Utah
Geoghegan, Louis Patrick	4 High	Res.	Salt Lake City, Utah
Giambastiani, Frank Paul	3 High	Res.	Los Angeles
Glynn, James Cavanaugh	3 High	Res.	Menlo Park
Glynn, Robert John	1 High	Ext.	Menlo Park
Glynn, Thomas Joseph	1 High	Ext.	Menlo Park
Grady, Robert Edward	Soph. Engr.	Ext.	Santa Clara
Greco, Fortunate Emil	Fresh. Engr.	Ext.	San Jose
Greco, Gaspar Joseph	3 High	Ext.	San Jose
Griffin, Joseph Glenn	3 High	Res.	Colusa
Griffin, Martin Lowell	4 High	Res.	Lonoak
Hageman, Theodore Joseph	4 High	Res.	Meridian
Hahir, Joseph Patrick	Soph. Engr.	Ext.	Redwood City
Hahir, Ward Hugh	Fresh. Engr.	Ext.	Redwood City
Haley, John DeBusman	3 High	Res.	Sacramento
Halloran, Albert Donald	3 High	Res.	San Francisco
Hamilton, Edward Anthony	4 High	Res.	Los Angeles
Hamilton, John Joseph Jr.	2 High	Res.	Los Angeles
Haneberg, George Louis	Soph. Let.	Res.	Honolulu, T. H.
Hardeman, Thomas Eugene	Fresh. Let.	Ext.	Palo Alto
Harrington, Charles Christopher	Fresh. Engr.	Res.	Butte, Mont.
Haviside, Byron Latham	2 High	Res.	San Francisco
Haviside, Russell Harry	4 High	Res.	San Francisco

Heintz, Jacob Eugene	Soph. Engr.	Ext.	Santa Clara
Henderson, Joseph Wulffing	3 Law	Ext.	Campbell
Herbruger, Rodolfo Florencio	Soph. Engr.	Res.	Panama City, R. P.
Hill, Harry Elmer	Soph. Engr. Spec.	Ext.	San Jose
Hoffmann, Ernest Rutherford	1 High	Ext.	Redwood City
Hogan, Andrew Peasley	Fresh. Engr.	Res.	Santa Monica
Holstein, Sim Francis	Fresh. Let.	Ext.	San Jose
Hunt, Willlam Stanislaus	1 High	Res.	Santa Barbara
Huot, Milton Joseph	4 High	Res.	San Francisco
Ivancovich, Nicholas Leo	3 High	Ext.	Santa Clara
Jackson, John Marcus	Soph. Let.	Res.	Seattle, Wash.
Jaeger, Eugene Richard	3 Law	Ext.	Santa Clara
James, Daniel William	Fresh. Let.	Ext.	San Francsico
Janney, Daniel C. Jackling	1 High	Res.	Los Angeles
Jauregui, Edwin Albert	4 High	Res.	Reno, Nev.
Johnson, Alfred William	4 High	Res.	Laramie, Wyo.
Johnson, Ralph Valentine	1 High	Ext.	San Jose
Jones, Charles James Jr.	Soph. Engr.	Res.	Los Angeles
Jones, Robert Welch	2 High	Ext.	San Jose
Jones, William Aloysius	2 High	Ext.	Redwood City
Joseph, Stanley Mathias	1 High	Res.	Newman
Karam, Saied Nassif	3 High	Res.	Nogales, Ariz.
Keller, Leo Joseph	3 High	Ext.	Santa Clara
Kelly, Philip Martin	2 High Coml.	Ext.	Redwood City
Kendall, Henry Bagley	2 High	Res.	Goldfield, Nev.
Kenney, Edmund Joseph	Spec. Philos.	Res.	Oakland
Kerckhoff, Porter Thomas Jr.	Let. 1 Law	Res.	Covina
Kinnison, Henry Almyr	Soph. Engr. Spec.	Res.	Tucson, Ariz.
Koch, Karl Herman	3 High	Res.	Suisun
Koehler, Keith Richard	4 High	Res.	Kansas City, Mo.
Lainez, Jōse Augusto	1 High	Res.	Honduras
Lange, William Francis	3 High	Res.	San Francisco
Laucirica, Alfonso Jesus	1 High	Res.	McDermott, Nev.

Leonard, James Dominic Jr.	Fresh. Let.	Res.	Oxnard
Leonard, Mason Barry	2 High Spec.	Res.	Albuquerque, N. M.
Lettunich, Lewis Washington	Fresh. Let.	Res.	Watsonville
Lewis, John Thomas	Soph. Let.	Res.	Hollister
Linares, Enrique Jr.	Soph. Engr.	Res.	Panama City, P. R.
Locurto, Peter	1 High	Ext.	Santa Clara
Logan, John Alphonsus	Jr. Let. 1 Law	Res.	Seattle, Wash.
Lotz, Robert Vincent	Soph. Engr.	Ext.	San Jose
Lutfy, William Patrick	1 High	Res.	Phoenix, Ariz.
Lynch, Thomas Connor	4 High	Res.	San Francisco
Maddux, Jackson Walker	2 High	Res.	San Francisco
Maggetti, Earl Ennio	Soph. Let.	Res.	Marshall
Mahoney, Daniel Emmett	Fresh. Let.	Res.	Blue Lake
Mainero, Alfred Victor	Fresh. Engr.	Ext.	San Jose
Malley, George Leo	3 High	Res.	Carson, Nev.
Maloney, Emile Daniel	2 High	Res.	Fallon
Maloney, Frank Joseph Benedict	Fresh. Let.	Ext.	San Mateo
Maloney, Harold Philip	Soph. Let.	Res.	Fallon
Mannelli, Caesar Joseph	Jr. Engr.	Res.	San Francisco
Manning, James Frank	2 High	Ext.	San Jose
Martin, Albert Edgar	1 High	Res.	Montague
Martin, Francis Gerald	1 High	Ext.	Santa Clara
Martin, Jesse Churchill	2 High	Res.	Montague
Martin, Henry Beaumont Jr.	4 High	Ext.	San Jose
Martin, Louis Scheller	2 High	Ext.	San Jose
Martin, Paul John	3 High	Res.	San Diego
Martin, Robert Milton	Fresh. Let.	Res.	Montague
Martin, Victor James	1 High	Ext.	San Jose
Martinelli, George Aloysius	1 High	Ext.	Santa Clara
Maurel, George Alfred	1 High	Res.	E. Bakersfield
McCarthy, Adair Bernard	Jr. Let. 1 Law	Res.	Townsend, Mont.

McCarthy, Richard Ignatius	Sr. Let. 2 Law	Ext.	San Jose
McCauley, Raymond Edward	Fresh. Engr.	Res.	Vallejo
McCormick, Ernest Oliver	3 High	Res.	San Francisco
McCormick, Henry Oliver	4 High	Res.	San Francisco
McDonald, John Daniel	2 High	Res.	San Francisco
McDonald, Joseph Anthony	4 High	Res.	Klamath Falls, Ore.
McEneaney, Charles Edward	4 High	Res.	Berkeley
McLaughlin, Stuart Charles	1 High	Ext.	Santa Clara
McSherry, Thomas Farrell	1 High	Res.	Watsonville
McSweeney, Ambrose Byrne Jr.	Engr.	Res.	S. San Francisco
Miller, Harry Vandervorst	Soph. Engr.	Ext.	Morgan Hill
Miller, Henry Joseph	Fresh. Engr.	Res.	Valdez, Alaska
Miller, Robert Lincoln	1 High	Res.	Berkeley
Minahan, Daniel Joseph	Sr. Engr.	Res.	Vallejo
Miramontes, Francis Coppinger	3 High	Ext.	Redwood City
Mitchell, William Francis	1 High	Ext.	Menlo Park
Moffitt, John Francis Ignatius	3 High	Res.	San Francisco
Mollen, John Willis	Soph. Let.	Res.	San Rafael
Monfort, Ildefonso Diaz	Spec.	Res.	Iloilo, P. I.
Montgomery, Jay Knobloch	1 High	Ext.	San Jose
Moore, Chester Wells	Spec. 2 Law	Ext.	San Jose
Moran, Frederick John	Jr. Let. 1 Law	Res.	San Francisco
Morettini, Joseph Louis	Jr. Engr.	Ext.	San Jose
Morettini, Peter Francis	Spec. 3 Law	Ext.	San Jose
Morey, Harry Bernard	1 High	Ext.	Menlo Park
Morgan, Robley Evans	Spec. 1 Law	Ext.	Santa Clara
Moroney, Thomas James	Spec. Law	Ext.	Wilton
Morrison, Cleeve Palmer	3 High	Res.	Los Angeles
Morrow, Michael St. Lawrence	2 High	Res.	Santa Barbara
Muheim, Henry Francis	1 High	Res.	Bisbee, Ariz.
Mullin, Hugh Francis Jr.	1 High	Ext.	San Mateo
Murphy, John Matthew	Fresh. Let.	Res.	Petaluma
Murphy, John Wilfred	Sr. Let. 2 Law	Ext.	San Jose

Murphy, Martin Murtha	Jr. Let. 1 Law	Res.	Milpitas
Neary, James Edward	Soph. Let.	Res.	Spokane, Wash.
Needles, James Richard	Soph. Let.	Res.	Seattle, Wash.
Neely, David Edwin	2 High	Res.	San Francisco
Noble, Cornelius Chester	Fresh. Let. Coml.	Res.	Madera
Nock, Leo Aloysius	3 High	Res.	Cambria
Nolan, Frank Gregory	3 High	Res.	Los Angeles
Nolan, Lloyd Benedict	4 High	Res.	San Francisco
Noll, Bernard George	Soph. Let.	Res.	Irvington
O'Brien, John Barton	Fresh. Let.	Res.	San Francisco
O'Brien, Norbert Patrick	1 High	Res.	San Francisco
O'Brien, Robert Paul	1 High	Ext.	Redwood City
O'Brien, Wayne Henry	1 High	Ext.	San Jose
O'Callaghan, Daniel Ignatius	2 High	Res.	San Francisco
O'Connor, James Bartholomew	3 Law	Res.	San Francisco
O'Connor Kenneth Raymond	Soph. Engr.	Ext.	San Jose
Oliva John Emanuel	3 High	Res.	Santa Rosa
O'Malley Edward Valentine	2 High	Res.	Tucson, Ariz.
Oneal, Duncan	3 High	Ext.	San Jose
O'Neill, Francis Howard	2 High	Res.	Nogales, Ariz.
O'Neill, Randall Oswald	Spec. 3 Law	Ext.	San Jose
O'Neill, William Joseph	3 High Coml.	Ext.	Santa Clara
O'Shea, John Francis	Jr. Let. 1 Law	Res.	Galt
Osterle, William Henry	Sr. Engr.	Res.	Colusa
Pabst, William Henry Jr.	1 High	Ext.	San Jose
Page, Robert Edward	Spec. Fresh. Engr.	Ext.	San Jose
Palomares, Elisandro William	Fresh. Let.	Res.	Oxnard
Pancera, George Dennis	Jr. Let. Spec.	Ext.	San Jose
Patten, Eugene Leo	2 High	Res.	Seattle, Wash.
Patten, Gerald Cyril	Jr. Let. 2 Law	Res.	Seattle, Wash.
Pecarovich, Michael Joseph	Spec. Jr. Let. 1 Law	Res.	San Pedro
Pereira, Thomas Selah	Fresh. Let.	Res.	Turlock

Perry, Bernard Joseph	3 High	Ext.	Redwood City
Piedmonte, Adolph Louis	Fresh. Let.	Res.	Turlock
Pigg, Victor Gerald	Fresh. Let.	Res.	Sedro Woolley, Wash.
Pitman, Hayden Wayland	Soph. Let.	Ext.	San Jose
Powell, Henry Newman	1 High	Res.	Visalia
Power, John Kilbreath	3 High	Res.	Visalia
Purdy, Ralph Stuart	Spec. 3 Law	Ext.	San Jose
Randazzo, Thomas	3 High	Ext.	San Jose
Read, Charles John	1 High	Res.	Phoenix, Ariz.
Reddy, Jean Paul	Jr. Engr.	Res.	Medford, Ore.
Regan, Lloyd James	Fresh. Let.	Res.	Fresno
Rethers, Charles Alfred	Soph. Let.	Res.	San Francisco
Rethers, Frank Albert	Jr. Let. 1 Law	Res.	San Francisco
Rethers, Harry Vincent	Soph. Engr.	Res.	San Francisco
Rianda, Angelo Victor	Fresh. Let.	Res.	Gonzales
Riley, Charles Ferguson	1 High	Res.	Paraiso Springs
Riley, Frederick John	Fresh. Let.	Res.	Seattle, Wash.
Roberts, Norman Francis	2 High	Res.	San Jose
Robidoux, Henry Moise	Fresh. Let.	Ext.	San Jose
Roll, William McKinley	Fresh. Let.	Ext.	Santa Clara
Romero, Salvador John	2 High	Res.	Los Angeles
Ronstadt, William Edward	2 High	Res.	Tucson, Ariz.
Ruff, Brownson Henry	1 High	Res.	Los Angeles
Russell, Charles George	4 High	Res.	Searchlight, Nev
Ryan, George Walter	Fresh. Let.	Res.	San Diego
Ryan, Pierce Howard Jr.	2 High	Res.	Eureka
Sanchez, Aldana Raphael	3 High	Res.	Zapotlan, Jal. Mex.
Saxe, Arthur James	Fresh. Let.	Ext.	San Jose
Scanlan, Philip Robert	1 High	Res.	Long Beach
Scettrini, Ernest Victor	Soph. Let.	Ext.	San Jose
Schall, Raymond Martin	Fresh. Engr.	Res.	Long Beach
Schirle, Francis Eugene	1 High	Ext.	San Jose
Schiro, Hugo Victor	1 High	Ext.	San Jose
Schnereger, Lynn Joseph	Spec. 4 High	Res.	Hanford
Schultz, Lawrence Leonard	2 High	Res.	Los Angeles

Scorsur, Andrew Matthew	Fresh. Let.	Ext.	San Jose
Sheehan, James Bertram	4 High	Res.	San Francisco
Sheehan, Joseph Aloysius	3 High	Res.	San Francisco
Sheerin, David Woerner	3 High	Res.	San Francisco
Shellooe, Raymond William	Fresh. Let.	Res.	Glenn
Sherriffs, William Robert	1 High	Ext.	San Jose
Shields, Alden David	2 High	Res.	Verona
Shields, Robert Emmett	Fresh. Let.	Res.	Verona
Smith, Francis Earl	Fresh. Let.	Res.	Portola
Smith, Francis Leo	3 High	Res.	Portland, Ore.
Smith, Leslie Joseph	Fresh. Let.	Ext.	San Jose
Somavia, John Trezevant	4 High	Ext.	San Jose
Sperry, Thomas Alexander	Spec. Let. 1 Law	Ext.	San Jose
Steiss, Albert John	3 High	Ext.	Palo Alto
Steiss, Charles Fay	1 High	Ext.	Palo Alto
Stivers, Raymond Chandler	2 High	Res.	Oakland
Sturdivant, Jack Raymond	2 High	Res.	Mountain View
Sturdivant, Tallentyre Basil	Jr. Let. 1 Law	Res	San Anselmo
Sullivan, Clarence Raphael	Jr. Engr.	Ext	Santa Clara
Sullivan, William Ward	3 Law	Ext	Santa Clara
Sylva, Henry Pualna	4 High	Res.	Honolulu, T. H.
Symons, Thomas Frederick	4 High	Res.	Sonora
Temple Thomas Workman	3 High	Res.	Alhambra
Thiltgen, Matthew Claire	1 High	Ext.	Santa Clara
Thompson, John Stanley	3 High Spec.	Res.	Watsonville
Tiernan, Philip	Fresh. Let.	Res.	Long Beach
Tinney, Francis Brady	Soph. Engr.	Ext.	Palo Alto
Toner, James Alexander	Fresh. Let.	Res.	San Francisco
Toso, Harold Joseph	4 High Spec.	Res.	San Francisco
Trabucco, Louis James	Jr. Let. 1 Law	Res.	Mariposa
Truman, George Collingwood	Fresh. Let.	Res.	Florence, Ariz.
Twomey, Earl James	1 High	Res.	Oakland
Van Dalsen, Stanley Burns	1 High	Ext.	San Jose
Varanini, Eugene Emilio	1 High	Res.	Sacramento

Veit, Henry Charles	3 Law	Res.	Newark
Vergara, Adolfo	Sr. Engr.	Res.	C. Guzman, Jal. Mex.
Walker, William Peter	2 High	Res.	Grizzly Bluff
Wallace, Howard Edward	4 High	Ext.	San Jose
Walsh, Andrew Desmond	4 High	Ext.	Redwood City
Walsh, Martin Simon	Spec. 1 Law	Ext.	Santa Clara
Waterman, Frank Joseph	2 High	Res.	Fresno
Weeden, Joseph Benjamin	1 High	Ext.	Menlo Park
Wendt, Henry Stephen Jr.	2 High	Ext.	San Jose
Weston, William Francis	2 High	Ext.	Menlo Park
White, Leon Escolle	3 High	Res.	Monterey
Whitfield, Isaac Heslop	2 High	Res.	Mission San Jose
Williams, Richard Hume	Fresh. Engr.	Ext.	Cupertino
Williamson, John William	Soph. Let.	Res.	Seattle, Wash.
Wilson, Harris Raymond	1 High	Ext.	San Jose
Wilkins, Raymond Gordon	Spec. 1 Law	Ext.	San Jose
Young, Carlton Dower	2 High	Res.	San Francisco
Zaragoza, Peter	2 High	Res.	Los Angeles

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